GRUNDFOS **DATA BOOKLET**

CHI, CHIU

Multipurpose stainless steel pumps
50/60 Hz

BE > THINK > INNOVATE >

GRUNDFOS

Contents

Introduction

The Grundfos **CHI** pumps are non-self-priming, horizontal, multistage centrifugal pumps.

GR2531 - GRA2115

Pump and motor are integrated in a compact and user-friendly design fitted to a base plate making the pumps suitable for installation in compact systems.

The pump is made of corrosion-resistant materials and thus ideally suited for water supply and a wide range of applications in industry, agriculture and in the food industry.

CHI pumps have many incorporated advantages such as those mentioned below.

Worldwide usage

- Different certificates and approvals like UL/CSA for America and Canada.
- Different voltage and frequency combinations.
- State-of-the-art shaft seal materials (silicon carbide SiC-G) offering these benefits:
  - high wear resistance and long operating times
  - reduced risk of sticking if the liquid contains glycol
  - improved dry-running properties due to the graphite content of the SiC.

Customized solutions

See Lists of variants on page 36.

- Motor adaptation.
- Pump body modifications.

CHIU pumps are horizontal, multistage centrifugal pumps of the canned rotor type, i.e. pump and motor form an integral unit without shaft seal. The pumps are made of stainless steel, and the bearings are lubricated by the pumped liquid.

GR7259

CHIU pumps have many incorporated advantages such as those mentioned below.

Low noise level

- No noise from the fan due to the liquid-cooled motor means a very low noise level.

Worldwide usage

- Different certificates and approvals like UL/CSA for America and Canada.
- Different voltage and frequency combinations.

Customized solutions

See Lists of variants on page 36.

- Pump body modifications.
- Modifications for R134a refrigerants.

Applications

The CHI and CHIU pumps are primarily designed for industrial applications.

Typical applications	CHI	CHIU
Water treatment	●	❍
Industrial washing and dish-washing machines	●	❍
Pressure boosting of process water	●	
Heating and cooling in industrial processes	●	❍
Air-conditioning	●	❍
Air washing, moisturisation and humidification (softened water)	●	●
Water supply and pressure boosting (potable water, also slightly chlorinated)	●	●
Fertilizer/dosing systems	●	❍
Aquafarming	●	

In addition, the CHI, CHIU pump is suitable for many special applications.

● Recommended

❍ Applicable

Pumped liquids

CHI, CHIU pumps are suitable for thin, clean and non-explosive liquids without solid particles or fibres.

The pumps are able to pump liquids such as demineralised water, softened water, cleaning solutions and light oils.

When pumping liquids with a density and/or viscosity higher than those of water, motors with correspondingly higher outputs must be used, if required.

WinCAPS can be used for the calculation of motor output when anti-freeze additives are used.

Whether a pump is suitable for a particular liquid depends on a number of factors of which the most important are chloride content, pH value, temperature and content of solvents, oils.

Maximum operating pressure and temperatures

The actual operating range depends on the operating pressure, the pump type, the type of shaft seal, the pumped liquid and the liquid temperature.

Temperatures

	O-ring material/liquid	Temperature
Liquid	EPDM	- 20 °C + 120 °C
	FKM / liquids containing water	- 20 °C + 90 °C
	FKM / oil without water	- 10 °C + 120 °C
	FKM / oil without water (where cUL and CSA approvals are required)	- 20 °C + 110 °C
Ambient temp.	At a relative air humidity of maximum 95 %	- 20 °C + 40 °C
Storage		- 30 °C + 55 °C

Maximum operating pressure: 10 bar.

Maximum inlet pressure is limited by the maximum operating pressure.

Shaft seal

Select the shaft seal on the basis of liquid temperature and type of liquid.

For other liquids than water, the chemical resistance of the materials, including seal face, seat and rubber components of the shaft seal, must be taken into account.

The following table shows the available shaft seal types.

Pump type		Shaft seal type	Material	Rubber parts
CHI	2, 4, 8, 12	BUBE	Tungsten carbide (U)	EPDM (E) FKM (V)
		BUBV	Tungsten carbide (U)	
		BQQE	Silicon carbide (Q)	
		BQQV	Silicon carbide (Q)	
	15, 20	BQQE	Silicon carbide (Q)	
		BQQV	Silicon carbide (Q)	
CHIU		No shaft seal		

The following curves apply to clean water and water containing antifreeze additives.

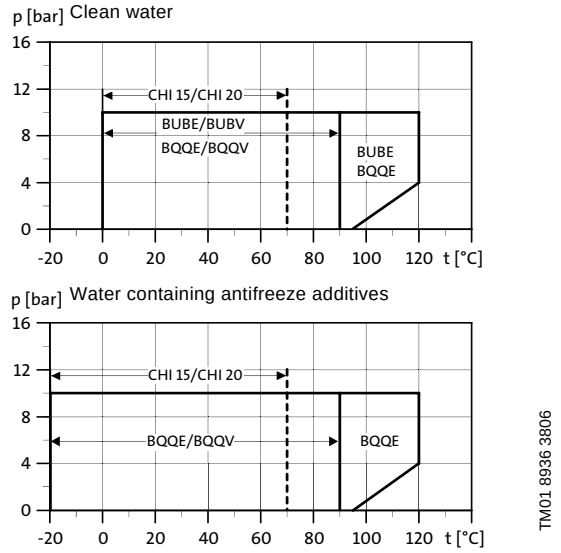


Fig. 1 Curves for the selection of shaft seals

The silicon carbide shaft seal, for instance BQQE, has excellent qualities in liquids containing anti-freeze additives. Furthermore, it is less sensitive to short-time dry running.

Note: Dry running must always be avoided.

Performance range, 50 Hz

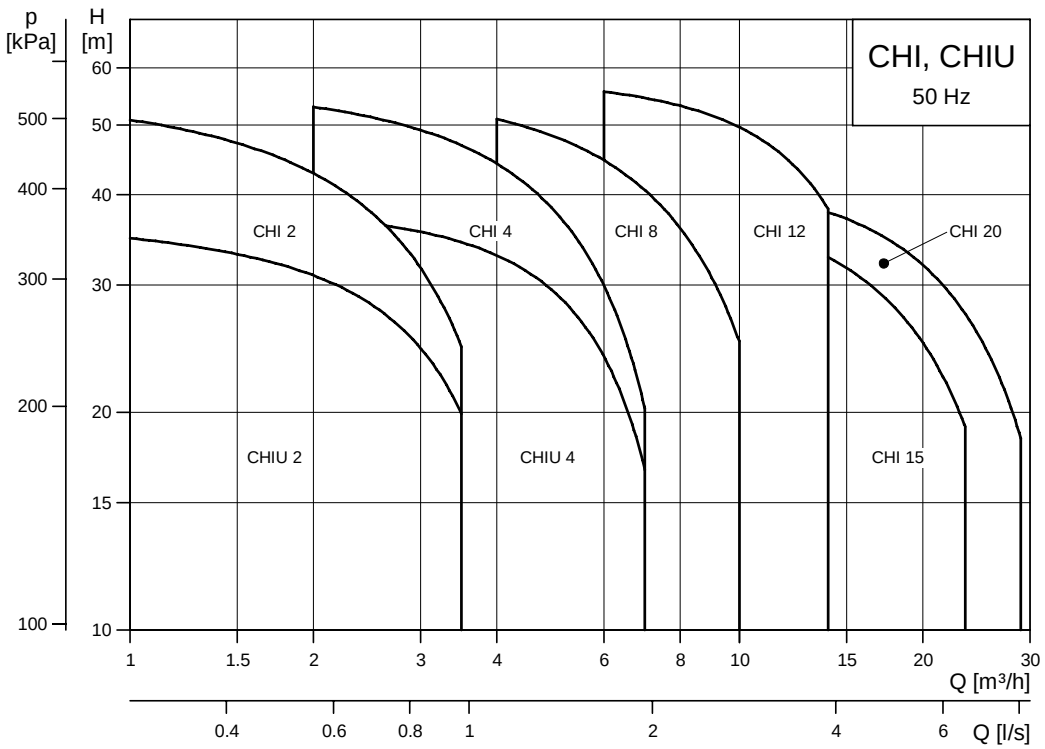


Fig. 2 Combined curves, 50 Hz

Performance range, 60 Hz

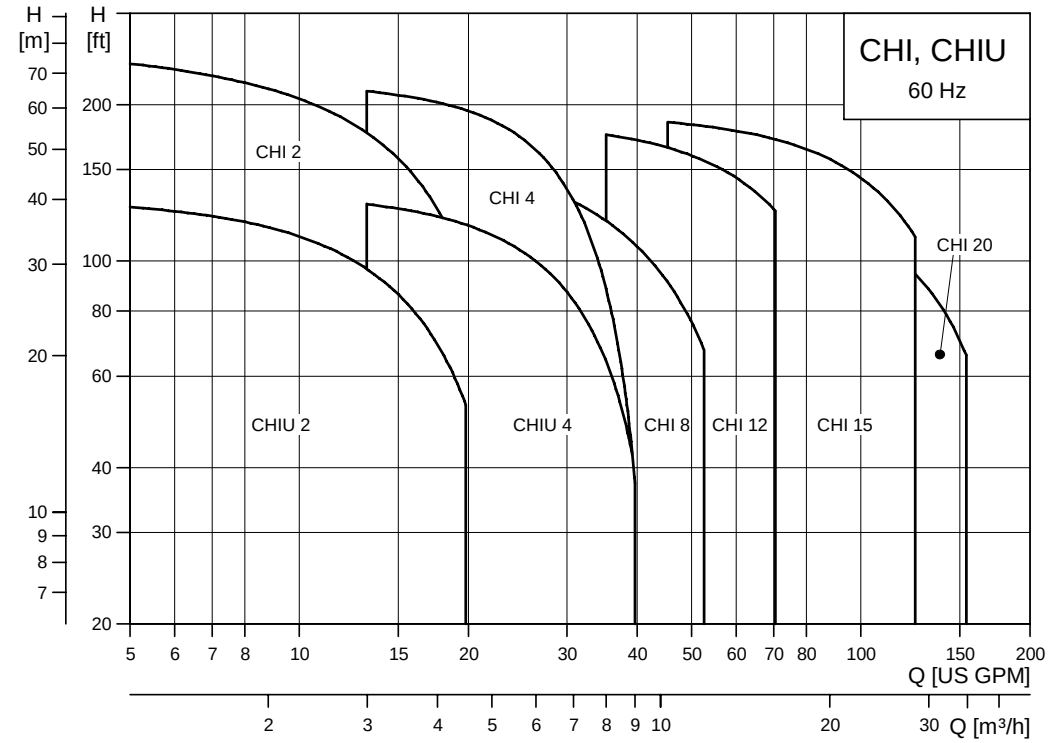


Fig. 3 Combined curves, 60 Hz

Type keys

CHI

Example	CHI	4	-	50	-	A	-	W	-	G	-	BQQE
Type range												
Nominal flow rate [m^3/h]												
Number of stages x 10												
Code for pump version												
Code for pipe connection												
Code for materials excl. plastic and rubber parts												
Code for shaft seal												

CHIU

Example	CHI	U	4	-	40	-	A	-	W	-	G	-	E
Type range													
Canned rotor type													
Nominal flow rate [m^3/h]													
Number of stages x 10													
Code for pump version													
Code for pipe connection													
Code for materials excl. plastic and rubber parts													
Code for rubber parts in pump													

Codes

Example	A	-W	-G	-E	-B	U	B	E
Pump version								
A Basic version								
Pipe connection								
W Internal thread								
B NPT thread								
N Connecting thread, special								
Materials								
G Parts of stainless steel 1.4401 or similar class								
X Special version								
Code for rubber parts in pump, CHIU								
E EPDM								
V FKM								

Shaft seal, CHI	B	U	B	E
B Rubber bellows seal				
U Tungsten carbide				
Q Silicon carbide				
A Carbon, metal-impregnated				
B Carbon, resin-impregnated				
E EPDM				
V FKM				

Pump, CHI

The pumps are made of stainless steel and have a maintenance-free mechanical shaft seal with dimensions according to DIN 24960.

The pump is compact with small physical dimensions, axial suction port and radial discharge port.

Connections	CHI 2	CHI 4	CHI 8	CHI 12	CHI 15	CHI 20
Axial suction port	Rp 1	Rp 1¼	Rp 1½	Rp 1½	Rp 2	Rp 2
Radial discharge port	Rp 1	Rp 1¼	Rp 1½	Rp 1½	Rp 2	Rp 2

Motor, CHI

The pump is coupled with a TEFC (totally enclosed, fan-cooled) Grundfos squirrel-cage motor.

Standard voltages:	1 x 220-240 V, 50 Hz 3 x 220-240/380-415 V, 50 Hz 1 x 115/230 V, 60 Hz 3 x 208-230/440-480 V, 60 Hz 3 x 575 V, 60 Hz
Voltage tolerance:	+ 6 %/– 10 %
Frequency tolerance:	±0.5%

Electrical tolerances according to EN 60034.

Enclosure class:	IP 55
Insulation class:	F
Sound-pressure level:	≤64 dB(A).
Cable connection:	M20 x 1.5 according to EN 50262 *(For Japan MG71/MG80 motors: Pg 16 thread according to DIN 40430)*

The single-phase motors are supplied with a built-in thermal relay to IEC 34-11. TP 211 (slow overload as well as locked rotor). The motors require no further motor protection.

Note: Single-phase motors with UL approval (1 x 115/230 V, 60 Hz) do not have built-in motor protection and therefore require external motor protection.

The three-phase motors do not incorporate thermal protection and therefore require external motor protection in accordance with local regulations.

The **sound pressure** level of the pump is lower than the limiting values stated in the EC Council Directive 98/37/EC relating to machinery.

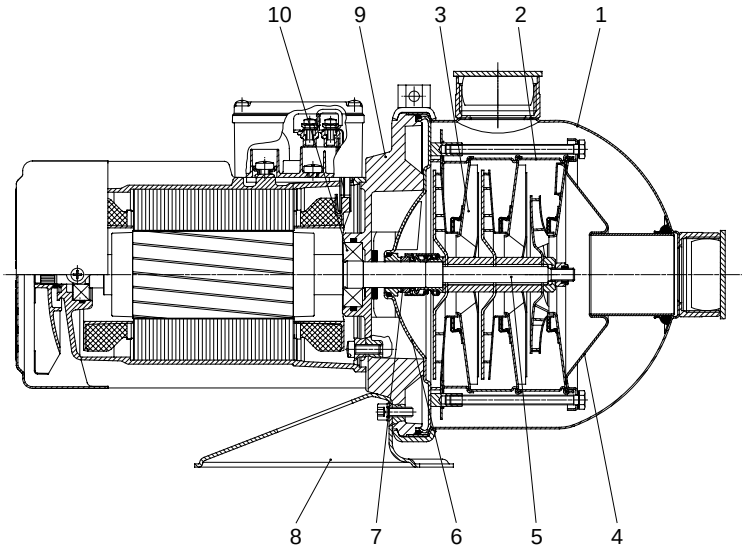
Frequency converter operation

Most three-phase motors can be operated with a frequency converter. See Lists of variants on page 36.

Materials, CHI

Pos.	Description	Materials	EN/DIN
1	Pump sleeve	Stainless steel	1.4401
2	Intermediate chamber/ guide vanes	Stainless steel	1.4401
3	Impeller	Stainless steel	1.4401
4	Suction interconnector	Stainless steel	1.4401
5	Splined shaft	Stainless steel	1.4401
6	Cover plate	Stainless steel	1.4401
7	Seal faces	BUBE, BUBV, BQQE, BQQV	
8	Base plate	Painted steel	1.0338
9	Motor flange	Cast iron	EN-JL1040
		Silumin	
10	Ball bearing		
	O-rings	EPDM or FKM	

Sectional drawing, CHI



TM00 0464 3897

Fig. 4 Sectional drawing, CHI

Pump, CHIU

The lack of a mechanical seal offers opportunities like using the pump for liquids which must be pressurized to stay fluid, such as the coolant **R134a**. Please contact Grundfos.

The pump is compact with small physical dimensions, axial suction port and radial discharge port.

Connections	CHIU 2	CHIU 4
Axial suction port	Rp 1	Rp 1¼
Radial discharge port	Rp 1	Rp 1¼

Motor, CHIU

The motor is a 2-pole, asynchronous squirrel-cage motor. The motor is cooled by the pumped liquid, and no fan-cooler is therefore used which make the sound level very low. The pump is thus suitable for noise-sensitive places, for instance in dwellings.

Standard voltages:	1 x 220-240 V, 50 Hz
	3 x 220-240 V, 50 Hz
	3 x 380-415 V, 50 Hz
	1 x 115/230 V, 60 Hz
	3 x 208-230/440-480 V, 60 Hz
	3 x 575 V, 60 Hz.
Voltage tolerance:	+ 6 %/– 10 %.
Electrical tolerances according to EN 60034.	
Enclosure class:	IP 44.
Insulation class:	H.
Sound-pressure level:	≤44 dB(A).

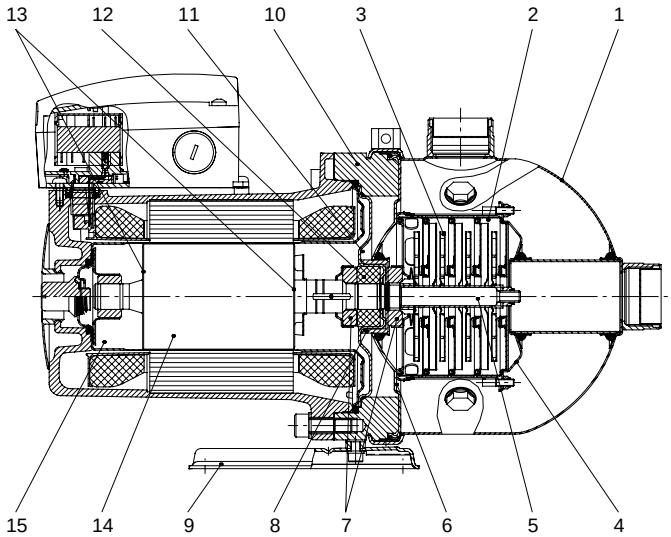
Single-phase and three-phase motors have overload protection. The pump requires an external contactor for motor protection, connected to the built-in thermal overload unit.

The **sound pressure** level of the pump is lower than the limiting values stated in the EC Council Directive 98/37/EC relating to machinery.

Materials, CHIU

Pos.	Description	Materials	EN/DIN
1	Pump sleeve	Stainless steel	1.4401
2	Chamber	Stainless steel	1.4401
3	Impeller	Stainless steel	1.4401
4	Suction interconnector	Stainless steel	1.4401
5	Spline shaft	Stainless steel	1.4401
6	Cover plate	Stainless steel	1.4401
7	Thrust bearing	Carbon MY 106	
8	Spacer sleeve	Stainless steel	1.4401
9	Base plate	Painted steel	1.0338
10	Motor flange	Aluminium	2.0615
11	Bearing plate	Stainless steel	1.4301
12	Radial bearing	Ceramic Al_2O_3/SiC	
13	Rotor ends	1-phase: Brass 3-phase: Copper	
14	Rotor cladding	Stainless steel	1.4401
15	Rotor can	Stainless steel	1.4401
	O-rings	EPDM or FKM	

Sectional drawing, CHIU



TM01 8742 0903

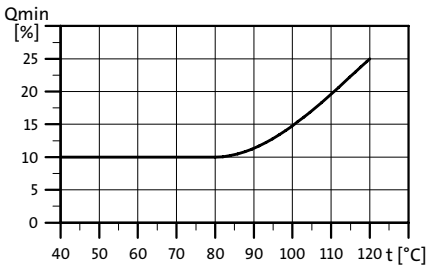
Fig. 5 Sectional drawing, CHIU

Curve conditions

The guidelines below apply to the curves shown on the following pages:

1. Tolerances to ISO 9906, Annex A, if indicated.
2. Measurements were made with airless water at a temperature of 20°C.
3. The curves apply to a kinematic viscosity of υ = 1 mm^2/s (1 cSt).
4. The bold curves indicate the **recommended** performance range. The thin curves are only a **guide**.
5. Due to the risk of overheating, the pumps should **not** be used at a flow below the minimum flow rate.

The curve below shows the minimum flow rate as a percentage of the nominal flow rate in relation to the liquid temperature.



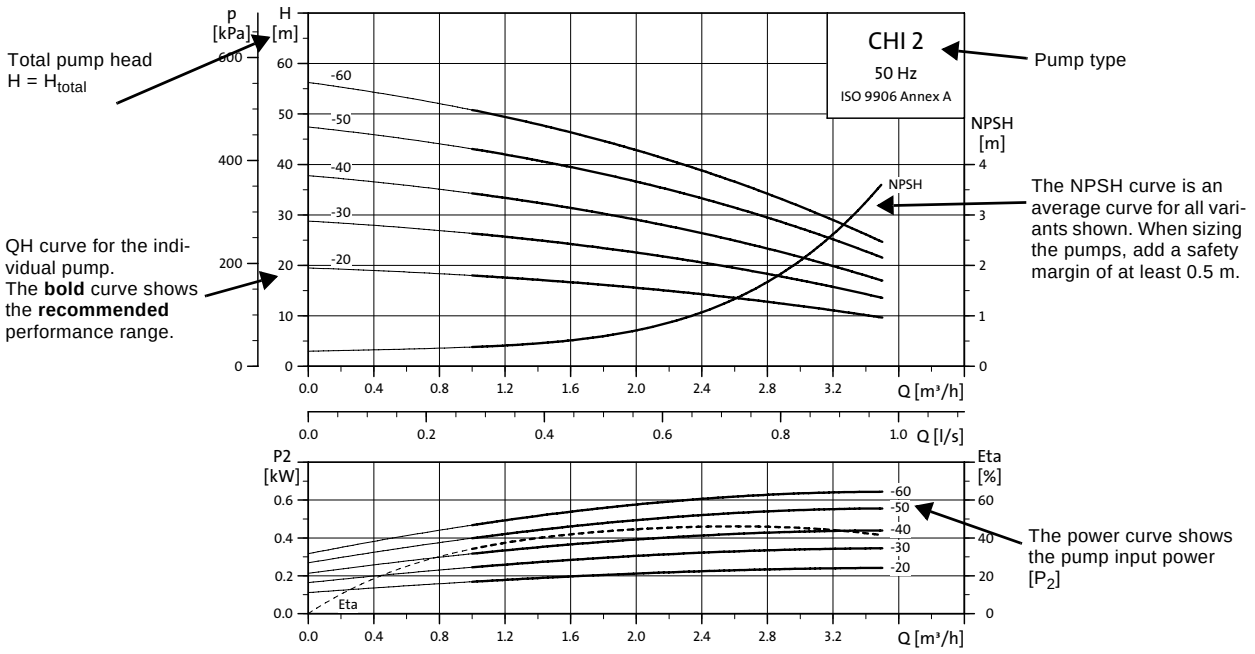
TM01 9158 1503

Fig. 6 Minimum flow rate

How to read the curve charts

Curves

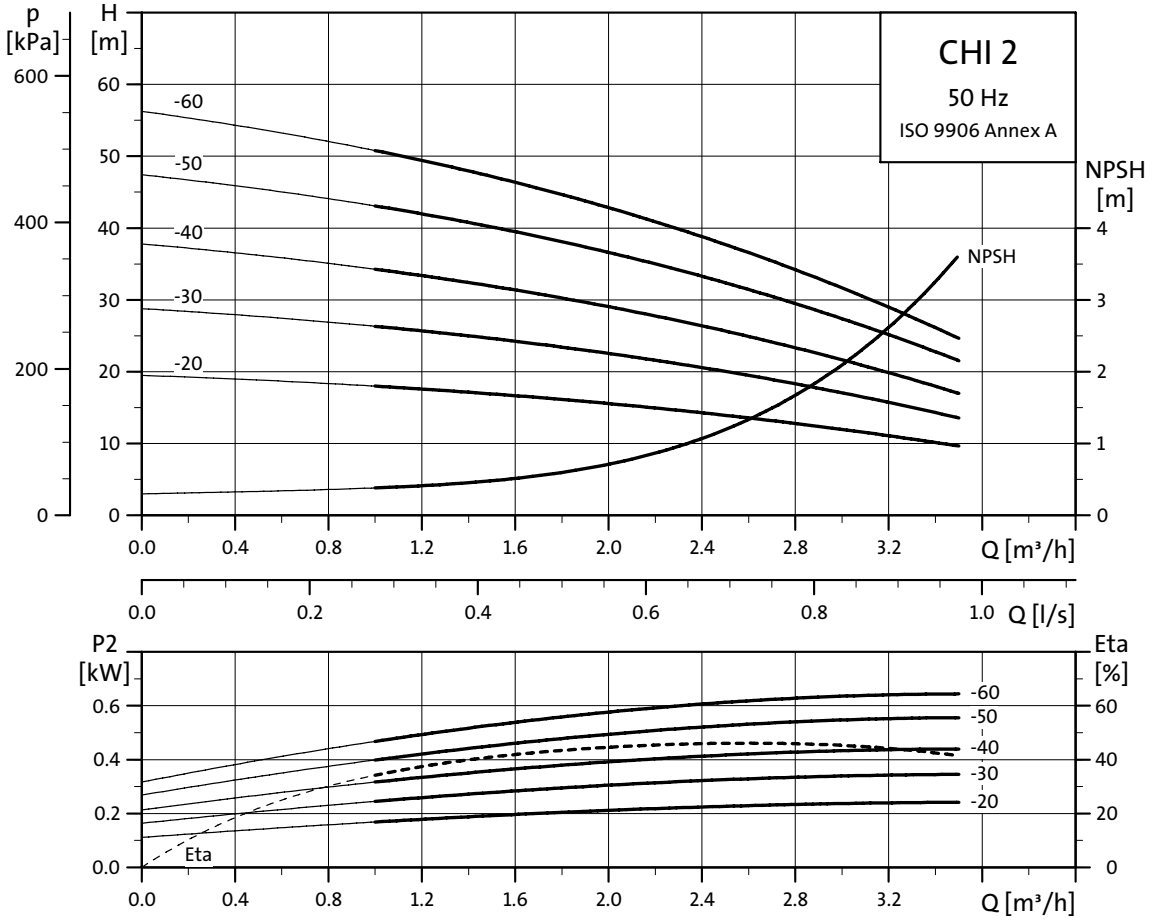
QH:	Pump performance at actual speed.
P_2:	Pump input power.
Eta 1:	Total efficiency, i.e. pump with motor, is shown in the curve charts as Eta 1.
NPSH:	Average values for all variants shown in chart 1. When sizing, make a safety allowance of at least 0.5 m.



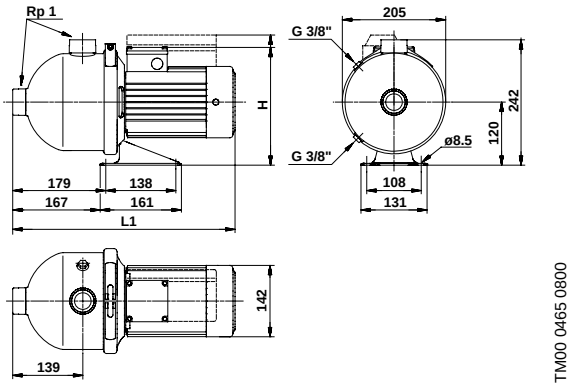
TM00 4347 2400

Technical data, 50 Hz

CHI 2, 50 Hz



Dimensions and weights



Pump type	Dimensions [mm]				Net weight [kg]
	1-phase		3-phase		
	L1	H	L1	H	
CHI 2-20	397	253	397	229	9.6
CHI 2-30	397	253	397	229	9.9
CHI 2-40	397	253	397	229	10.1
CHI 2-50	397	253	397	229	10.8
CHI 2-60	397	253	397	229	11.0

Electrical data

1 x 220-240 V, 50 Hz

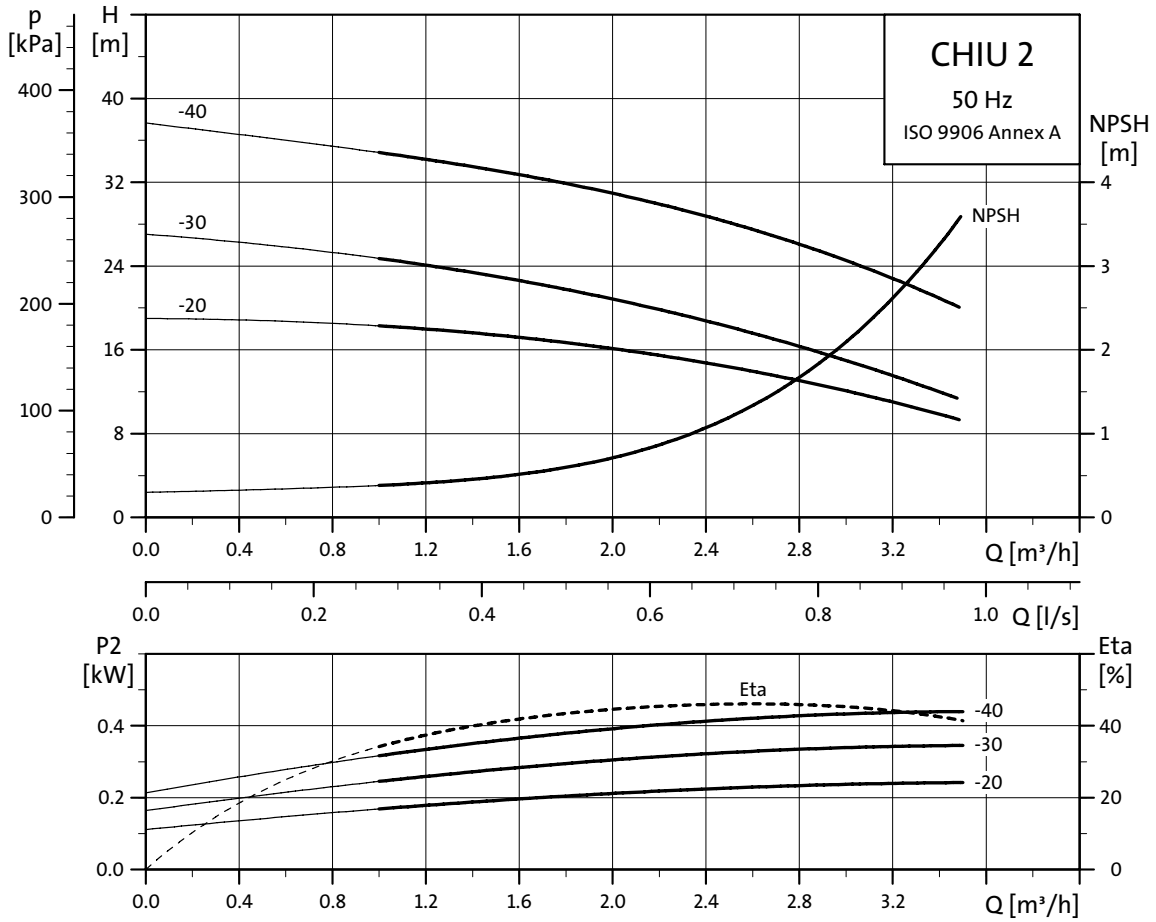
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 2-20	450	1.9-2.4	2920
CHI 2-30	540	2.4-2.6	2880
CHI 2-40	640	2.9-2.9	2850
CHI 2-50	800	3.6-3.5	2850
CHI 2-60	940	4.4-4.0	2820

3 x 220-240Δ/380-415Y V, 50 Hz

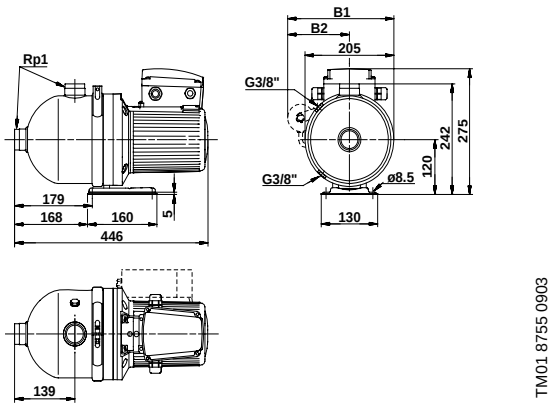
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 2-20	350	1.5/0.8	2940
CHI 2-30	480	1.7/1.0	2910
CHI 2-40	620	1.9/1.1	2885
CHI 2-50	820	2.6/1.5	2885
CHI 2-60	950	2.8/1.6	2860

Technical data, 50 Hz

CHIU 2, 50 Hz



Dimensions and weights



Pump type	Dimensions [mm]		Net weight [kg]
	1-phase		
	B1	B2	
CHIU 2-20	245	142.5	20.3
CHIU 2-30	245	142.5	20.6
CHIU 2-40	245	142.5	20.9

Electrical data

1 x 220-240 V, 50 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 2-20	450	2.0-2.5	2900
CHIU 2-30	540	2.5-2.7	2900
CHIU 2-40	640	3.0-3.0	2900

3 x 220-240Δ V, 50 Hz

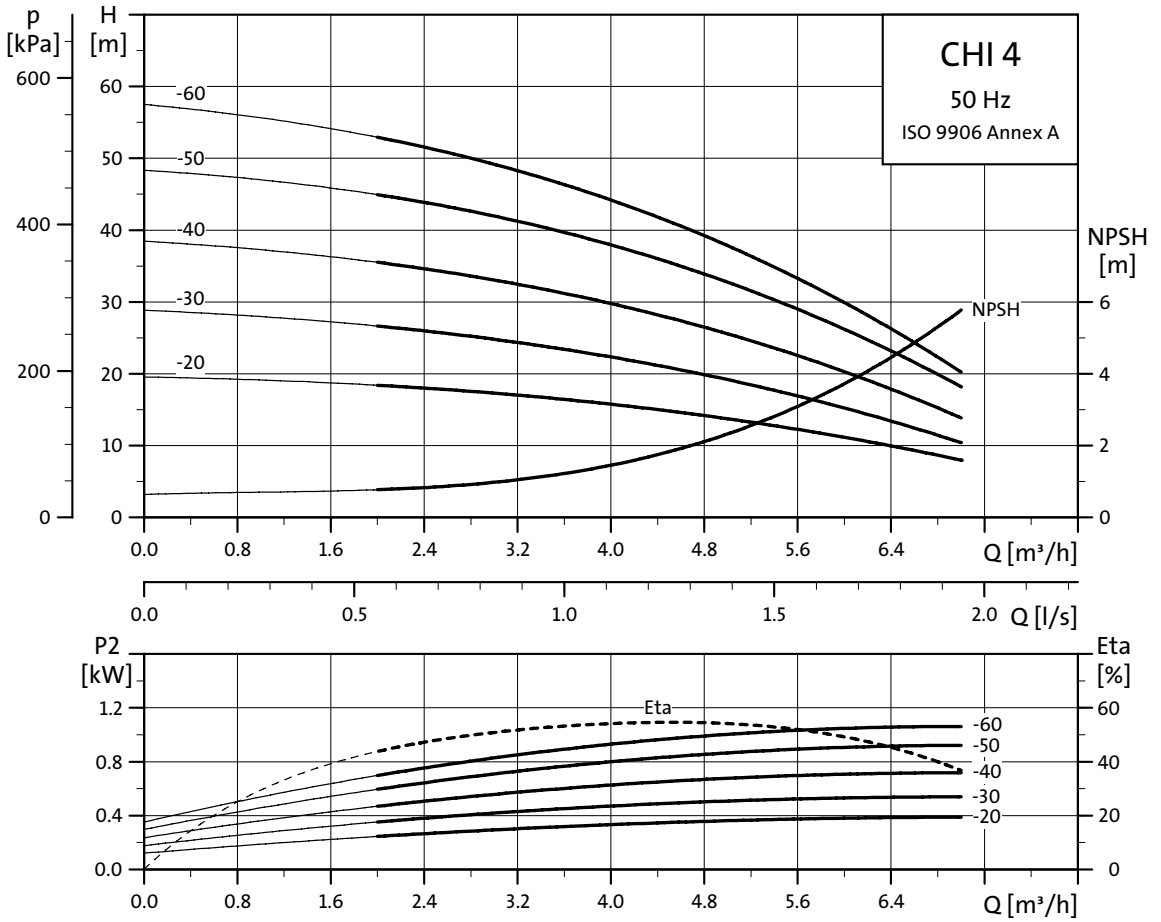
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 2-20	350	1.6	2900
CHIU 2-30	480	1.8	2900
CHIU 2-40	620	2.0	2900

3 x 380-415Δ V, 50 Hz

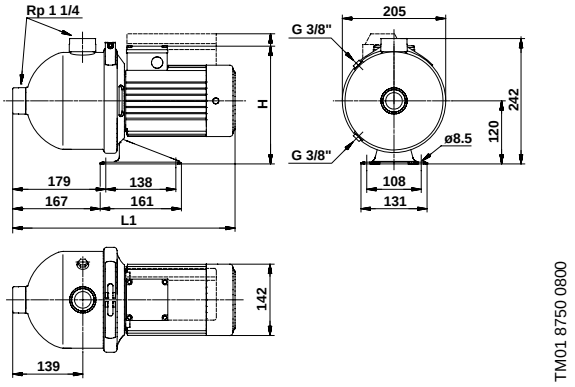
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 2-20	350	0.9	2900
CHIU 2-30	480	1.1	2900
CHIU 2-40	620	1.2	2900

Technical data, 50 Hz

CHI 4, 50 Hz



Dimensions and weights



Pump type	Dimensions [mm]				Net weight [kg]
	1-phase		3-phase		
	L1	H	L1	H	
CHI 4-20	397	253	397	229	9.6
CHI 4-30	397	253	397	229	9.9
CHI 4-40	397	253	397	229	10.6
CHI 4-50	437	253	437	229	12.1
CHI 4-60	437	253	437	229	12.3

Electrical data

1 x 220-240 V, 50 Hz

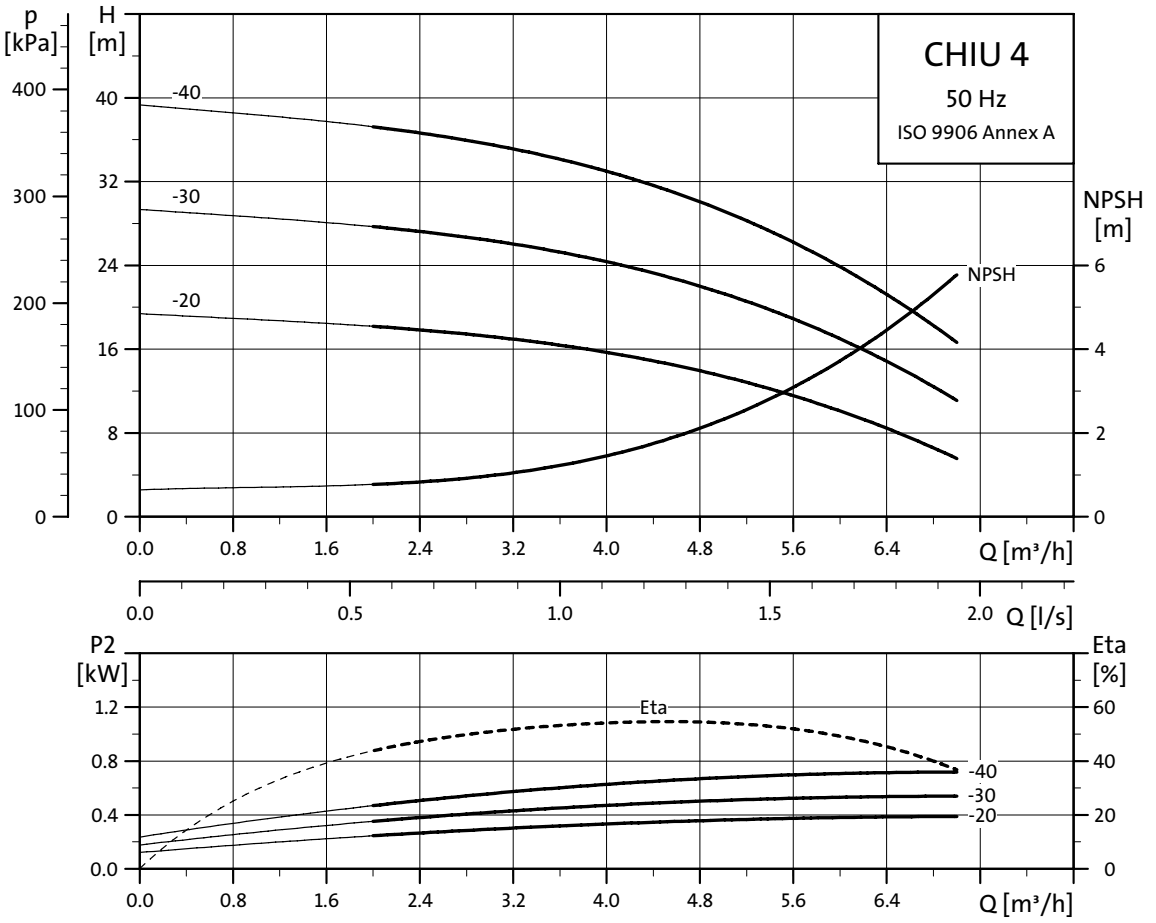
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 4-20	590	2.6-2.7	2885
CHI 4-30	820	3.7-3.6	2830
CHI 4-40	1040	4.9-4.5	2860
CHI 4-50	1420	6.6-5.7	2830
CHI 4-60	1510	7.1-6.8	2850

3 x 220-240Δ/380-415Y V, 50 Hz

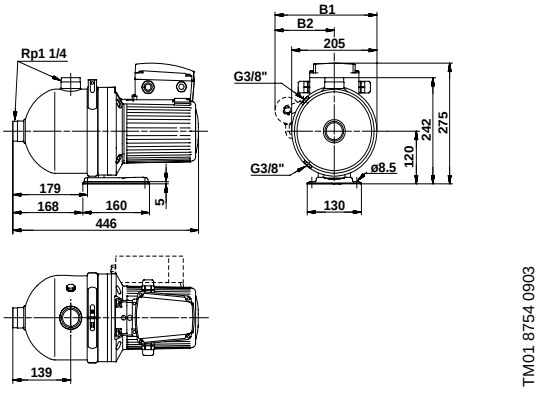
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 4-20	550	1.8/1.0	2900
CHI 4-30	800	2.4/1.4	2870
CHI 4-40	1080	3.2/1.8	2860
CHI 4-50	1330	4.0/2.3	2870
CHI 4-60	1630	4.8/2.7	2850

Technical data, 50 Hz

CHIU 4, 50 Hz



Dimensions and weights



Pump type	Dimensions [mm]				Net weight [kg]
	1-phase		3-phase		
	B1	B2	B1	B2	
CHIU 4-20	245	142.5	-	-	20.3
CHIU 4-30	245	142.5	-	-	20.6
CHIU 4-40	-	-	-	-	20.9

Electrical data

1 x 220-240 V, 50 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 4-20	590	2.7-2.8	2900
CHIU 4-30	820	3.4-3.7	2900

3 x 220-240Δ V, 50 Hz

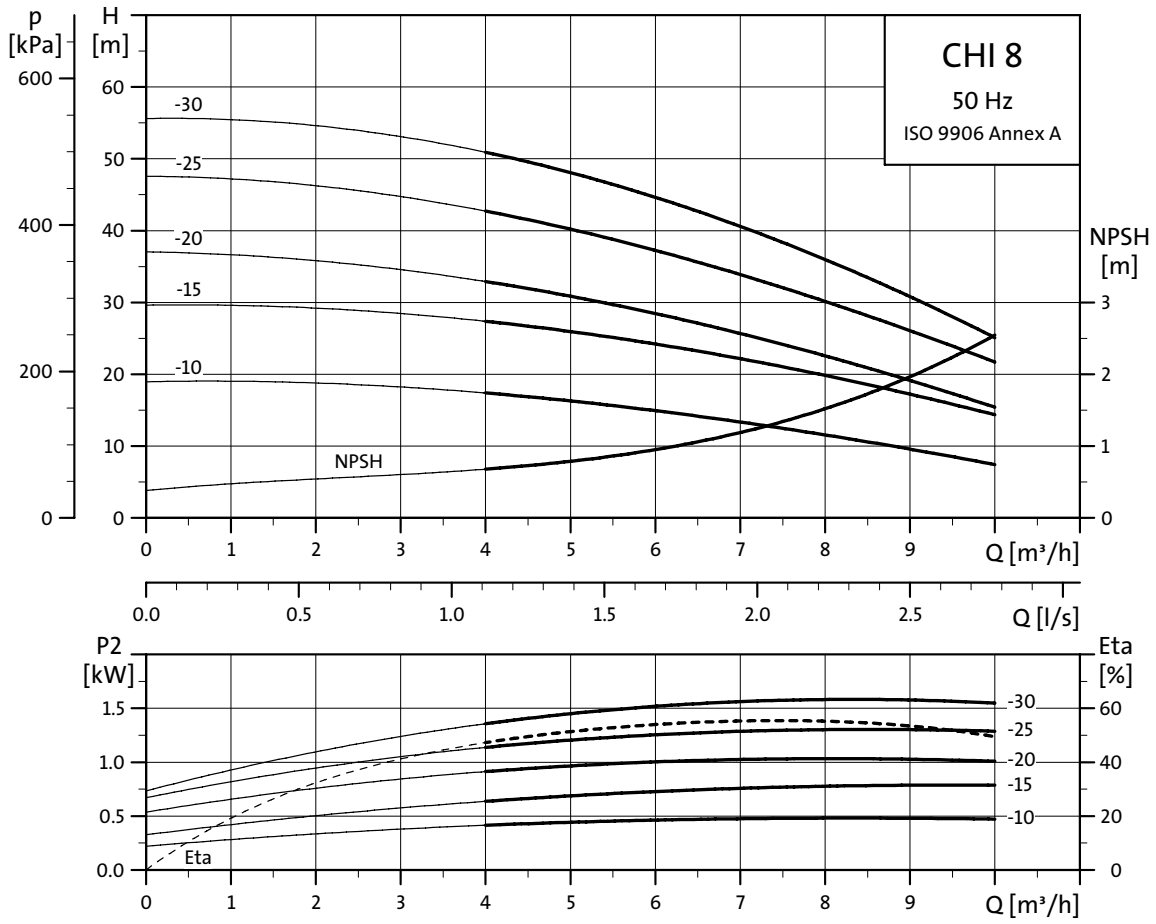
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 4-20	550	1.9	2900
CHIU 4-30	800	2.5	2900
CHIU 4-40	1080	3.3	2900

3 x 380-415Δ V, 50 Hz

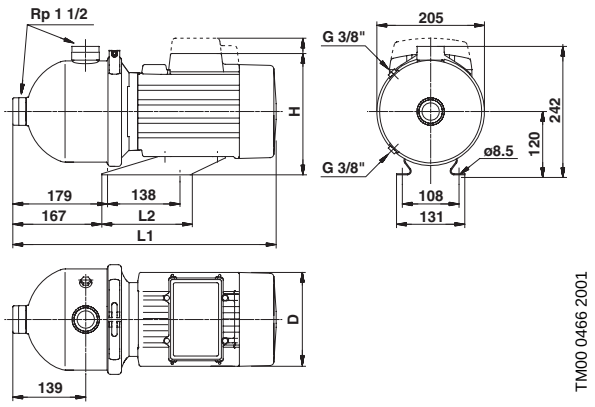
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 4-20	550	1.1	2900
CHIU 4-30	800	1.5	2900
CHIU 4-40	1080	1.9	2900

Technical data, 50 Hz

CHI 8, 50 Hz



Dimensions and weights



Pump type	Dimensions [mm]				Net weight [kg]
	L1	D	H		
			1-phase	3-phase	
CHI 8-10	397	142	229	229	10.5
CHI 8-15	437	142	229	229	12.1
CHI 8-20	437	142	229	229	13.7
CHI 8-25	500	142	259	229	14.3
CHI 8-30	500	178	259	230	21.4

Electrical data

1 x 220-240 V, 50 Hz

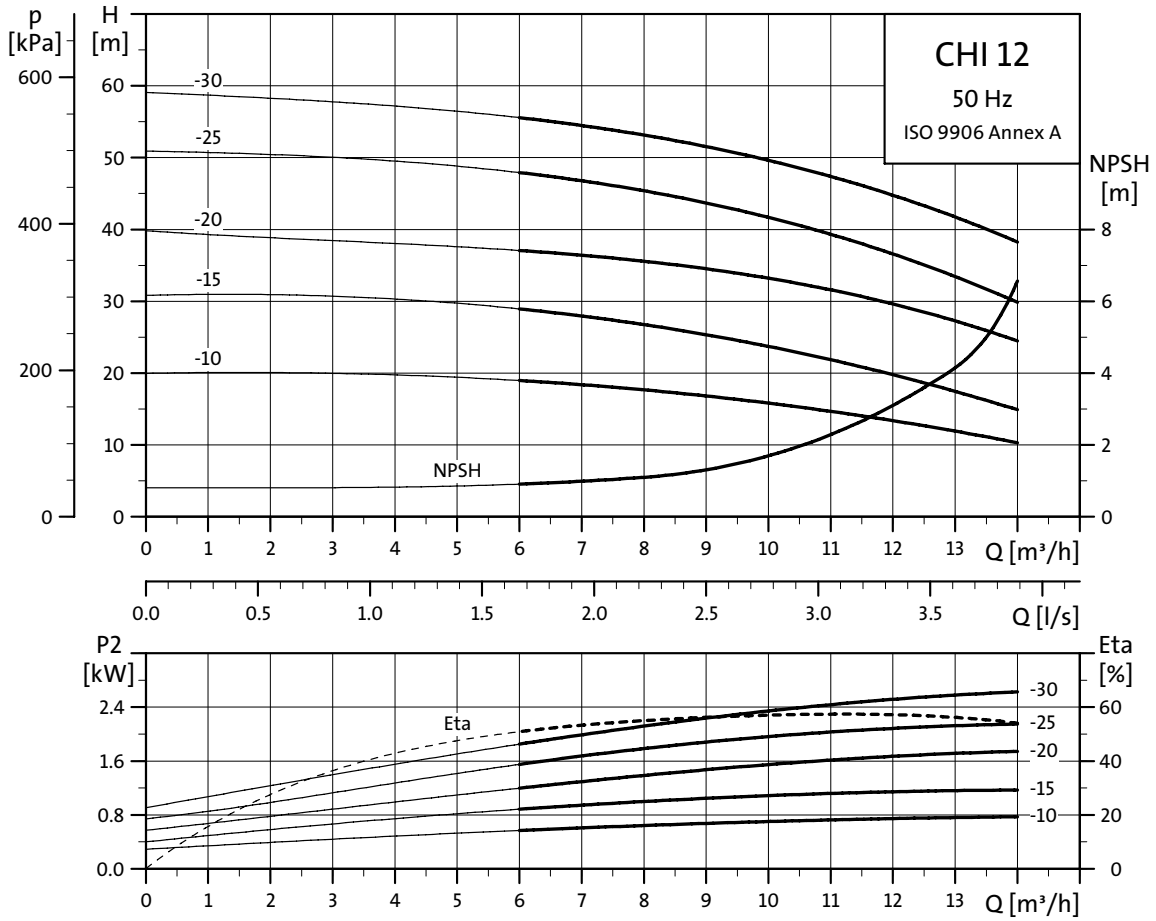
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 8-10	730	3.1-3.2	2840
CHI 8-15	1040	4.9-4.5	2750
CHI 8-20	1350	6.2-6.2	2800
CHI 8-25	1860	8.6-8.3	2815
CHI 8-30	2230	10.6-9.2	2820

3 x 220-240Δ V/380-415Y V, 50 Hz

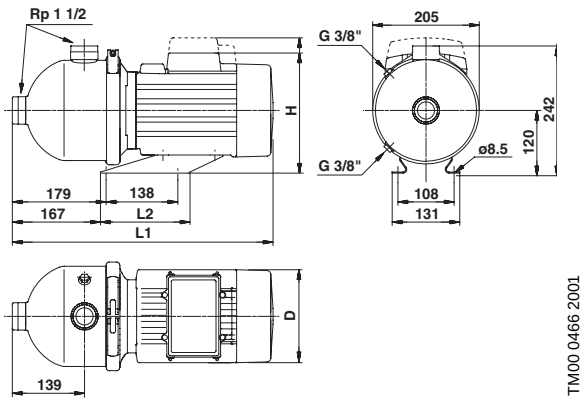
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 8-10	720	2.4/1.4	2875
CHI 8-15	1090	3.3/1.9	2835
CHI 8-20	1370	5.3/3.1	2880
CHI 8-25	1730	5.8/3.4	2830
CHI 8-30	2080	6.5/3.7	2890

Technical data, 50 Hz

CHI 12, 50 Hz



Dimensions and weights



Pump type	Dimensions [mm]				Net weight [kg]
	L1	D	H		
			1-phase	3-phase	
CHI 12-10	437	142	253	229	11.8
CHI 12-15	437	142	253	229	13.5
CHI 12-20	500	178	259	230	20.9
CHI 12-25	500	178	259	230	23.9
CHI 12-30	500	178	–	230	23.9

Electrical data

1 x 220-240 V, 50 Hz

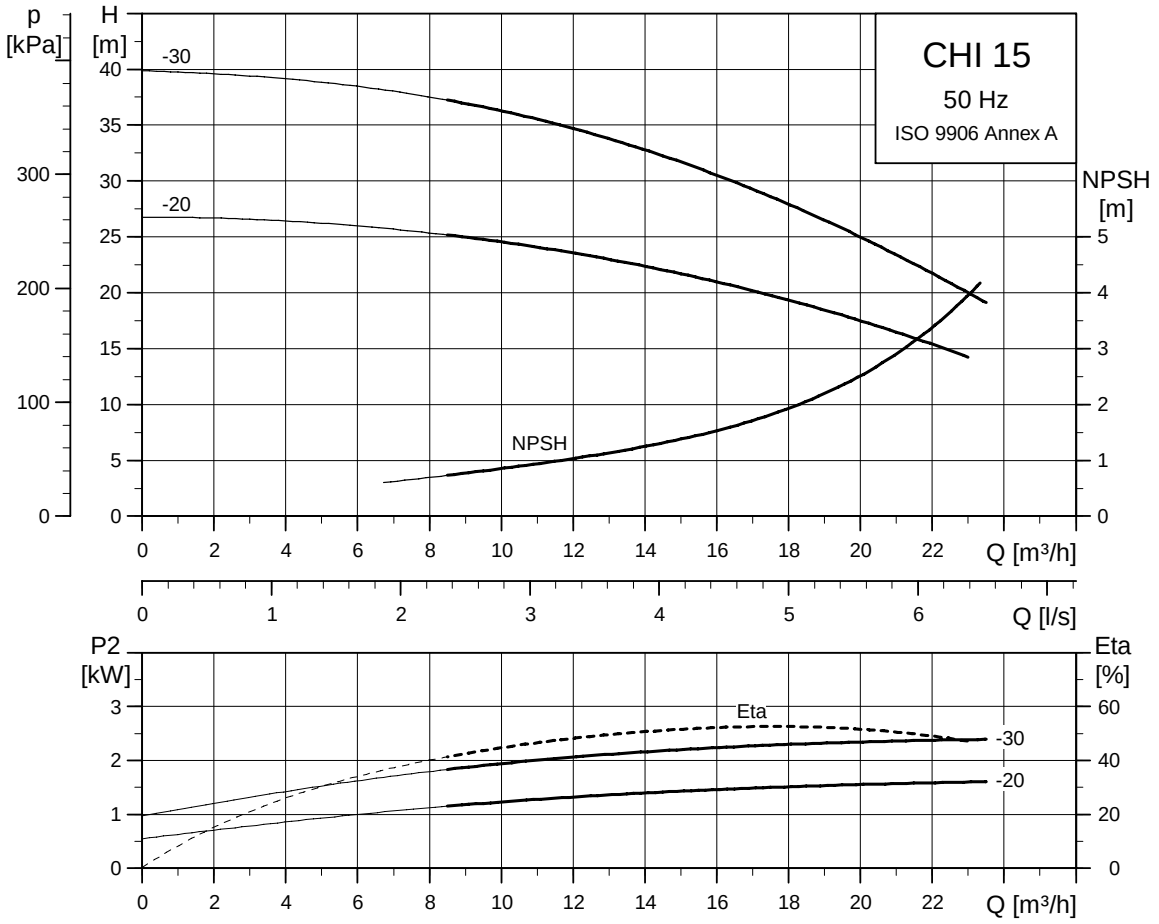
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 12-10	1170	5.5-4.9	2830
CHI 12-15	1600	7.5-6.9	2740
CHI 12-20	2310	10.9-10.1	2880
CHI 12-25	2800	13.7-12.4	2810

3 x 220-240Δ V/380-415Y V, 50 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 12-10	1170	3.6/2.1	2860
CHI 12-15	1600	4.8/2.8	2820
CHI 12-20	2300	7.1/4.1	2900
CHI 12-25	2800	9.0/5.2	2890
CHI 12-30	3310	10.4/6.0	2900

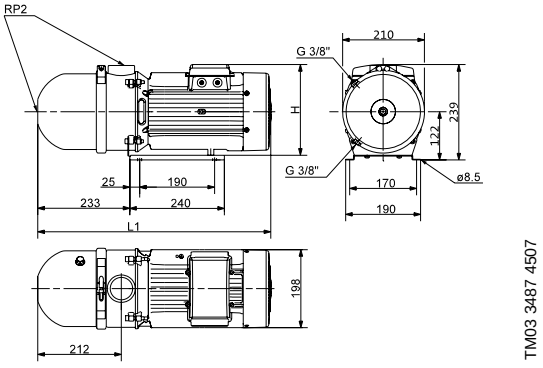
Technical data, 50 Hz

CHI 15, 50 Hz



TM034202 1806

Dimensions and weights



TM03 3487 4507

Pump type	Dimensions [mm]		Net weight [kg]
	L1	H	
CHI 15-20	591	242	36.5
CHI 15-30	591	242	38.0

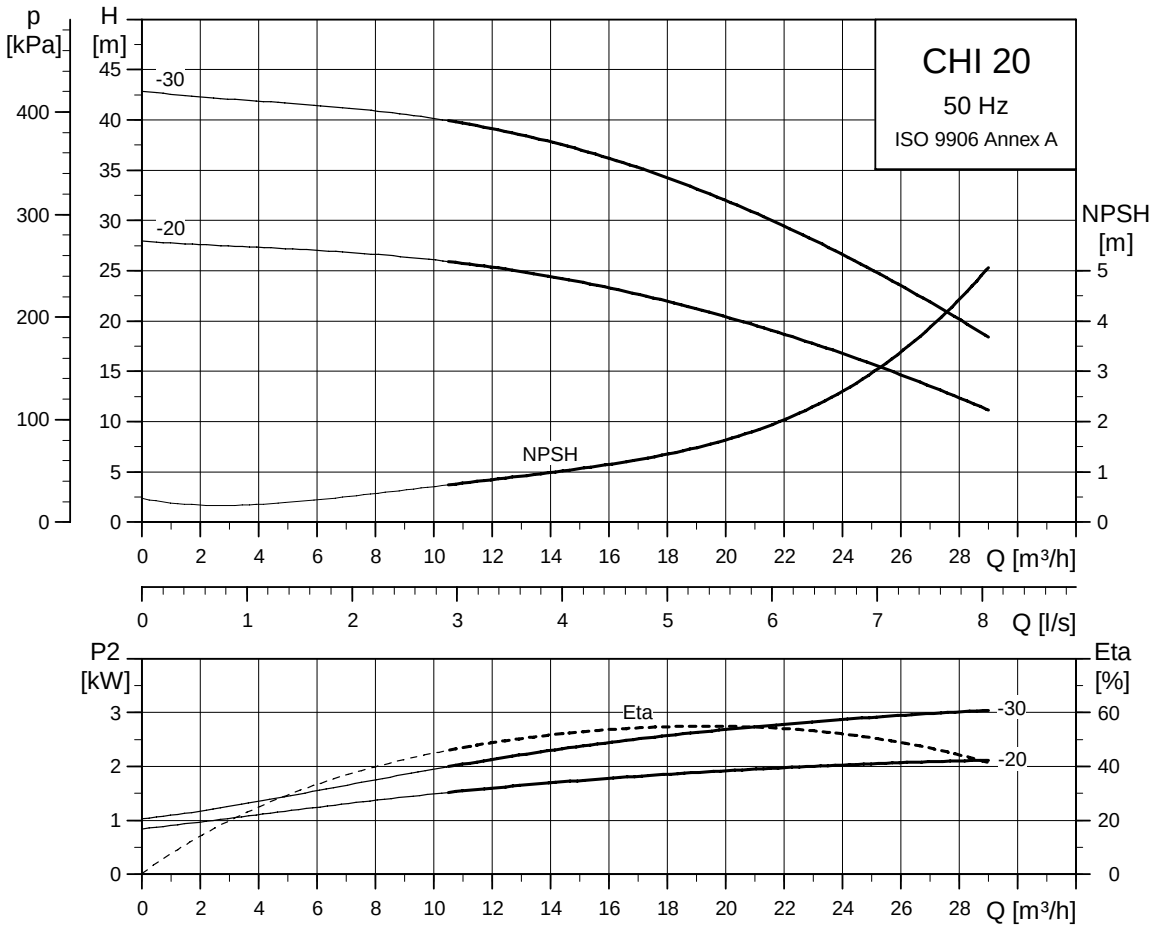
Electrical data

3 x 220-240Δ V/380-415Y V, 50 Hz

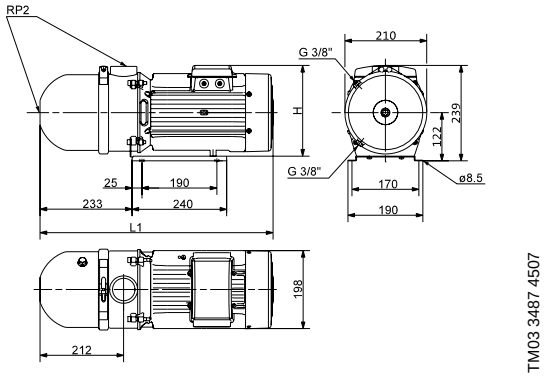
Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 15-20	1917	7.7/4.45	2960
CHI 15-30	2809	9.7/5.6	2920

Technical data, 50 Hz

CHI 20, 50 Hz



Dimensions and weights



Pump type	Dimensions [mm]		Net weight [kg]
	L1	H	
CHI 20-20	591	242	36.5
CHI 20-30	591	242	37.0

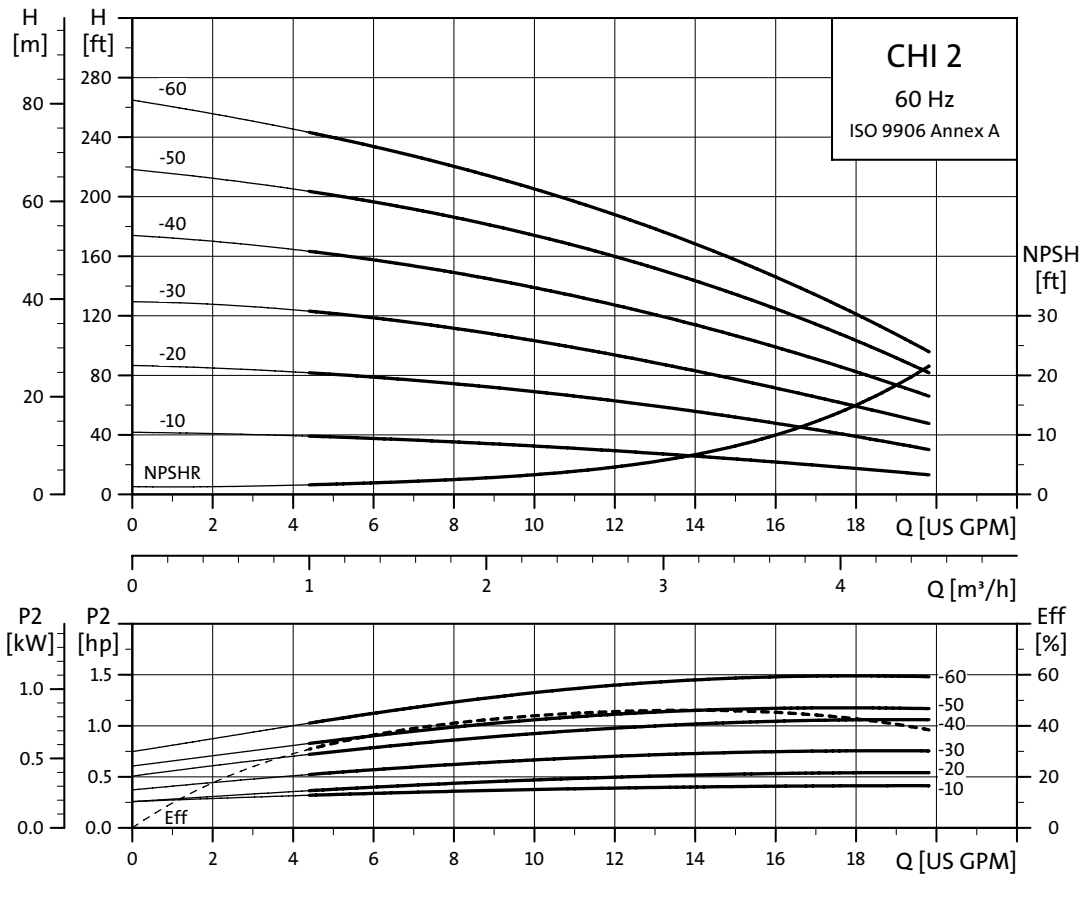
Electrical data

3 x 220-240Δ V/380-415Y V, 50 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHI 20-20	2457	9.3/5.4	2840
CHI 20-30	3538	11.2/6.5	2910

Technical data, 60 Hz

CHI 2, 60 Hz



TM02 8481 0204

Electrical data, USA

With cUL approval

1 x 115 V / 230 V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 2-10	0.5	4.8/2.5
CHI 2-20	0.5	5.8/3.0
CHI 2-30	0.5	7.0/3.6
CHI 2-40	0.75	9.4/4.7
CHI 2-50	0.75	10.8/5.4
CHI 2-60	1.0	13/6.5

3 x 208-230YY V / 440 V-480Y V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 2-10	0.33	1.0/0.5
CHI 2-20	0.5	1.8/0.9
CHI 2-30	0.5	2.3/1.2
CHI 2-40	0.75	3.1/1.5
CHI 2-50	0.75	3.6/1.8
CHI 2-60	1.0	4.5/2.3

Electrical data, Canada

With cUL approval

3 x 575Y V, 60 Hz

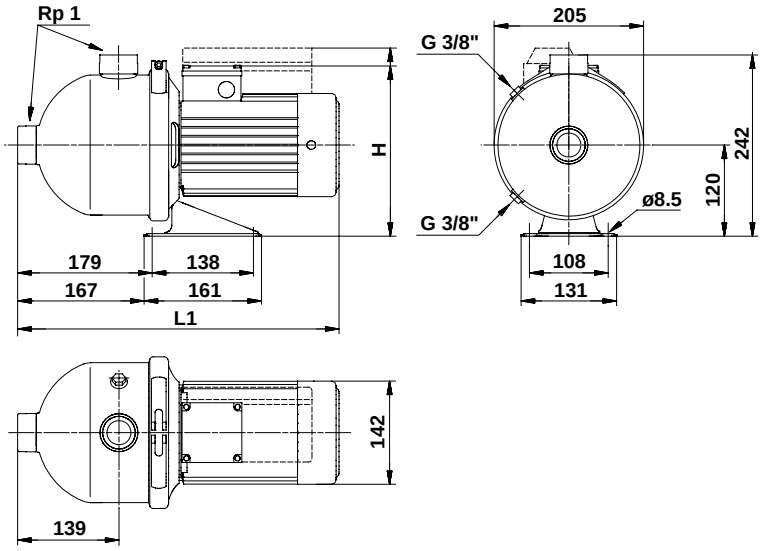
Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 2-10	0.33	0.40
CHI 2-20	0.5	0.72
CHI 2-30	0.5	0.96
CHI 2-40	0.75	1.20
CHI 2-50	0.75	1.44
CHI 2-60	1.0	1.84

Electrical data, Japan

3 x 200-220 Δ / 346-380 Y

Pump type	P_2 [W]	$I_{1/1}$ [A]
CHI 2-10	300	1.4/0.8
CHI 2-20	395	2.1/1.2
CHI 2-30	550	2.7/1.6
CHI 2-40	775	3.5/2.0

Technical data, 60 Hz



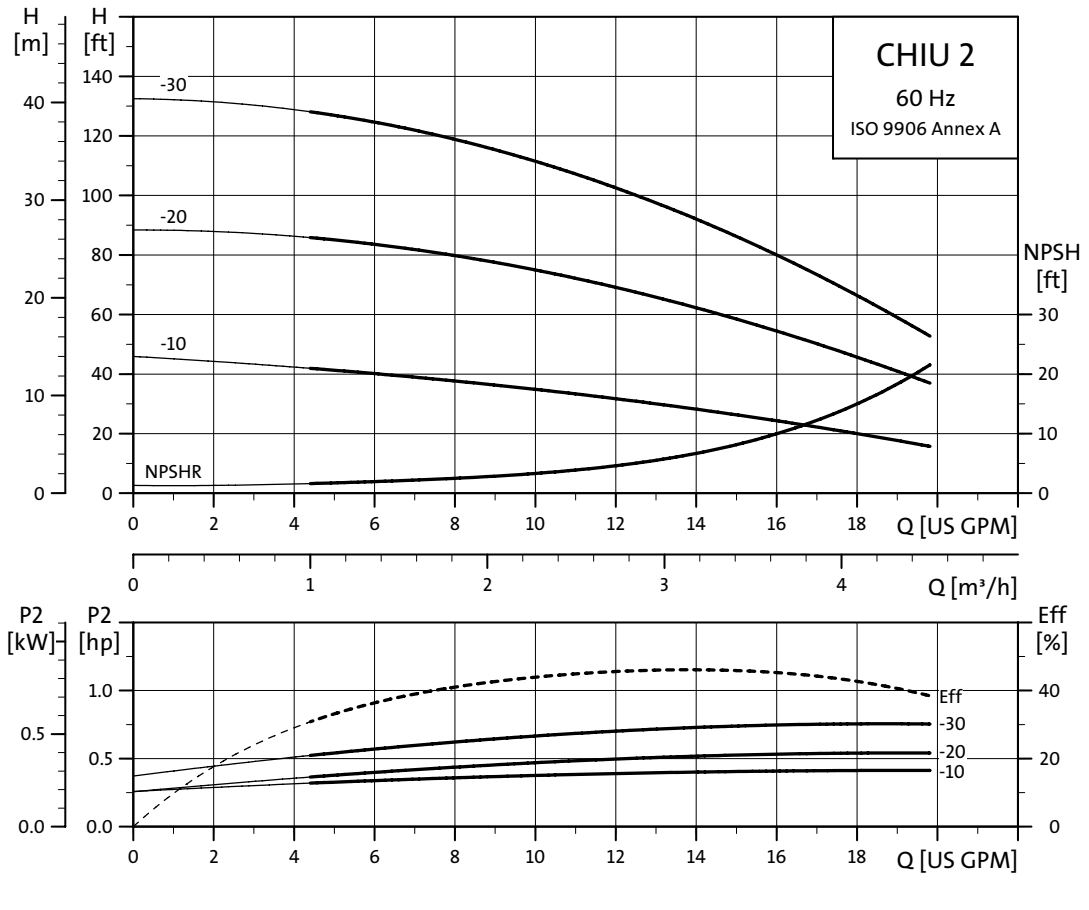
TM00 0465 0800

Dimensions and weights

Pump type	L1 [mm]		H [mm]		Net weight [kg]	
	1-phase	3-phase	1-phase	3-phase	1-phase	3-phase
CHI 2-10	397	397	253	229	9.3	9.4
CHI 2-20	397	397	253	229	9.6	9.6
CHI 2-30	397	397	253	229	9.9	9.9
CHI 2-40	437	397	253	229	11.7	10.6
CHI 2-50	437	397	253	229	12.0	-
CHI 2-60	437	437	229	229	13.6	-

Technical data, 60 Hz

CHIU 2, 60 Hz



TM02 8479 0204

Electrical data, USA

With cUL approval

1 x 230 V, 60 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 2-10	690	3.5	3340
CHIU 2-20	830	4.0	3310
CHIU 2-30	970	4.6	3280

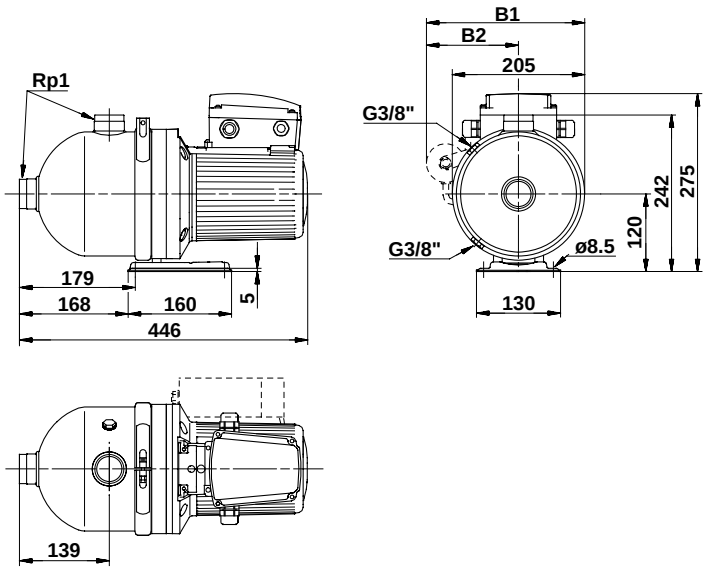
3 x 440-480Δ V, 60 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 2-10	500	1.4	3500
CHIU 2-20	720	1.5	3480
CHIU 2-30	880	1.6	3500

3 x 208-230YY V, 60 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 2-10	500	2.5	3500
CHIU 2-20	720	2.8	3480
CHIU 2-30	880	3.0	3500

Technical data, 60 Hz



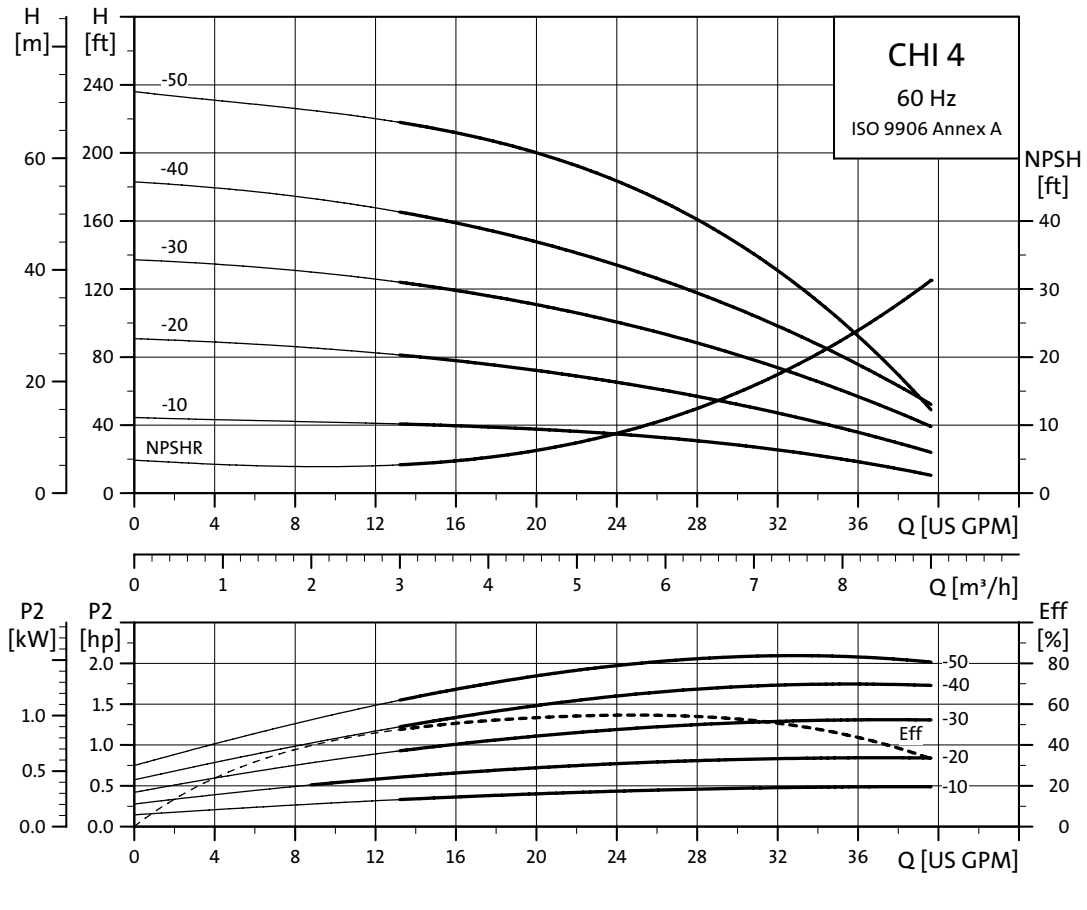
TM01 8755 0903

Dimensions and weights, USA

Pump type	B1 [mm]	B2 [mm]	Net weight [kg]
CHIU 2-10	245	142.5	20.1
CHIU 2-20	245	142.5	20.3
CHIU 2-30	245	142.5	20.6
CHIU 2-40	245	142.5	20.9

Technical data, 60 Hz

CHI 4, 60 Hz



TM02 8482 0204

Electrical data, USA

With cUL approval

1 x 115 V / 230 V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 4-10	0.5	6.0/3.0
CHI 4-20	0.5	9.0/4.5
CHI 4-30	0.75	11.5/5.7
CHI 4-40	1.0	15.0/7.5
CHI 4-50	1.5	19.3/9.7

3 x 208-230YY V / 440-480Y V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 4-10	0.33	1.55/0.75
CHI 4-20	0.5	2.9/1.45
CHI 4-30	0.75	4.0/2.1
CHI 4-40	1.0	5.2/2.6
CHI 4-50	1.5	6.2/3.1

Electrical data, Canada

With cUL approval

3 x 575Y V, 60 Hz

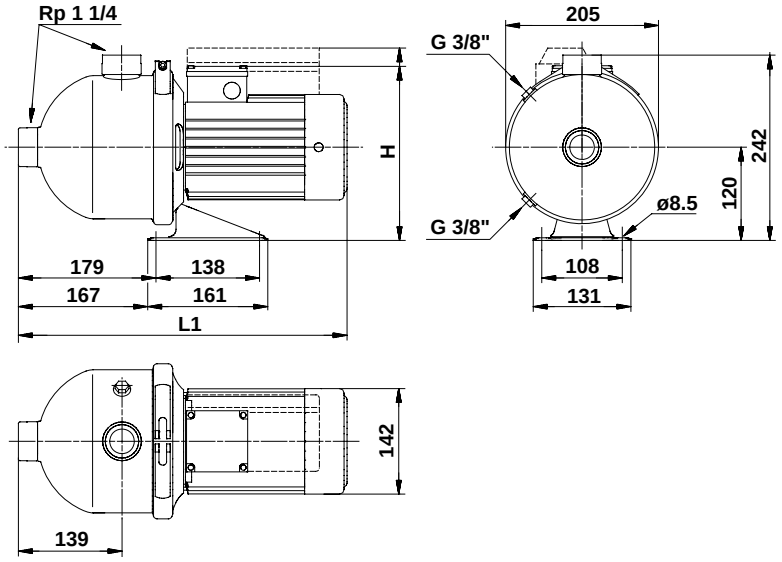
Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 4-10	0.33	0.60
CHI 4-20	0.5	1.16
CHI 4-30	0.75	1.68
CHI 4-40	1.0	2.08
CHI 4-50	1.5	2.48

Electrical data, Japan

3 x 200-220 Δ / 346-380 Y

Pump type	P_2 [W]	$I_{1/1}$ [A]
CHI 4-10	360	1.6/0.9
CHI 4-20	620	3.0/1.7
CHI 4-30	960	4.7/2.7
CHI 4-40	1280	6.5/3.7

Technical data, 60 Hz



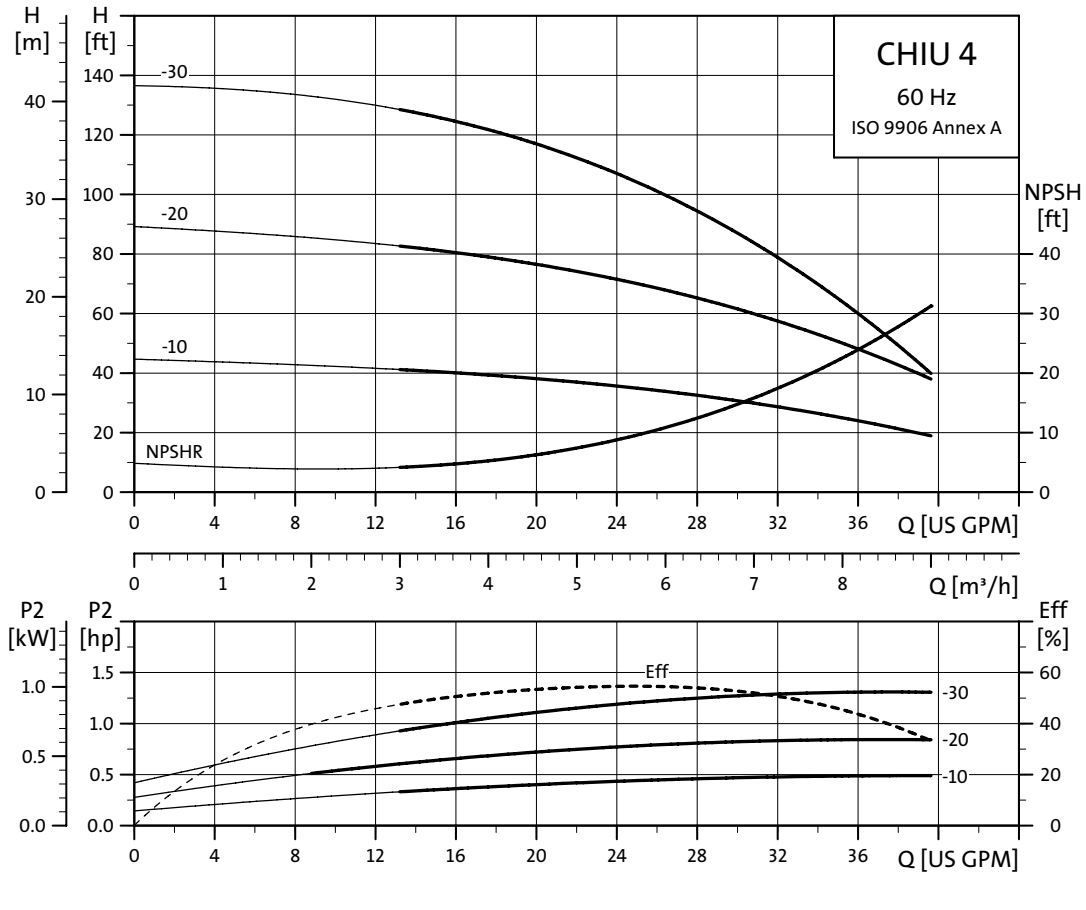
TM01 8750 0800

Dimensions and weights

Pump type	L1 [mm]		H [mm]		Net weight [kg]	
	1-phase	3-phase	1-phase	3-phase	1-phase	3-phase
CHI 4-10	397	397	253	229	9.3	9.4
CHI 4-20	397	397	253	229	9.6	9.6
CHI 4-30	*437*	397	253	229	11.4	10.4
CHI 4-40	437	437	229	229	13.0	11.9
CHI 4-50	500	437	259	229	24.0	-

Technical data, 60 Hz

CHIU 4, 60 Hz



TM02 8480 0204

Electrical data, USA

With cUL approval

1 x 230 V, 60 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 4-10	810	4.0	3310
CHIU 4-20	1010	4.7	3260

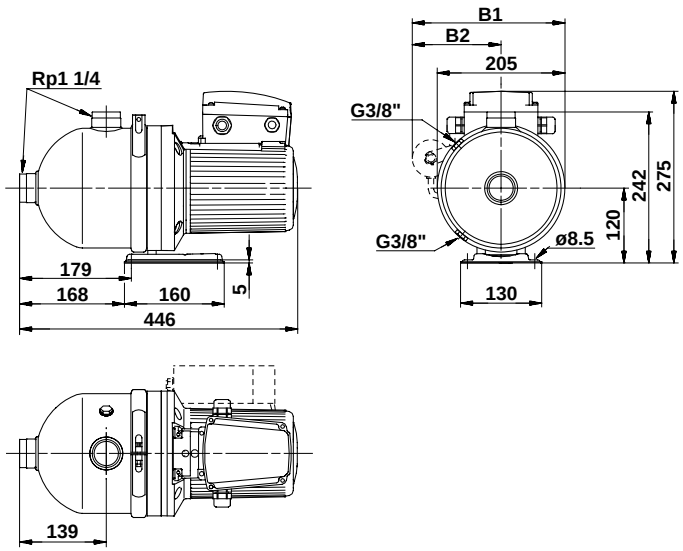
3 x 208-230Δ V, 60 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 4-10	740	2.8	3460
CHIU 4-20	1050	3.4	3420
CHIU 4-30	1350	4.2	3380

3 x 440-480Δ V, 60 Hz

Pump type	P_1 [W]	$I_{1/1}$ [A]	n [min^{-1}]
CHIU 4-10	740	1.6	3480
CHIU 4-20	1050	1.8	3440
CHIU 4-30	1300	2.0	3400

Technical data, 60 Hz



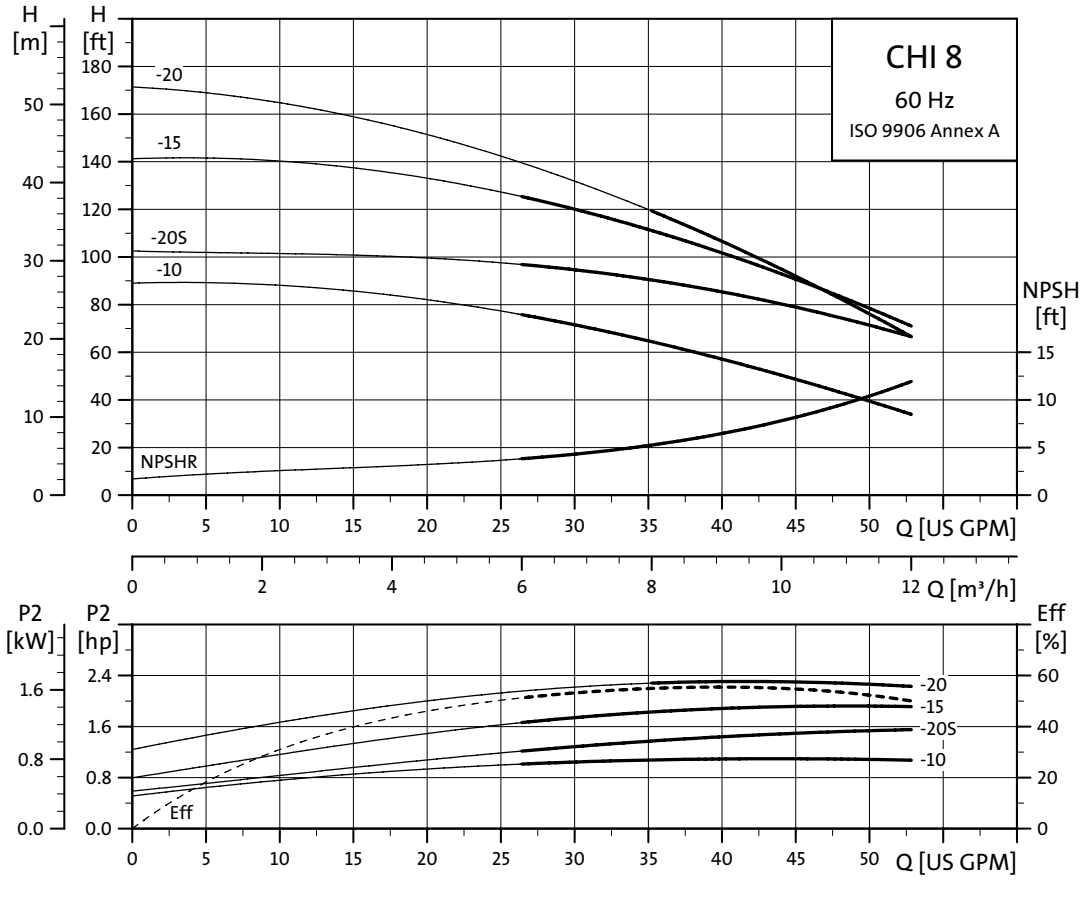
TM01 8754 0903

Dimensions and weights

Pump type	B1 [mm]	B2 [mm]	Net weight [kg]
CHIU 4-10	245	142.5	20.1
CHIU 4-20	245	142.5	20.3
CHIU 4-30	245	142.5	20.6

Technical data, 60 Hz

CHI 8, 60 Hz



TM02 8483 0204

Electrical data, USA

With cUL approval

1 x 115 V / 230 V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 8-10	0.75	10.6/5.3
CHI 8-20 S	1.0	14.6/7.3
CHI 8-15	1.5	18.2/9.3
CHI 8-20	1.5	21.5/10.7

3 x 208-230YY V / 440-480Y V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 8-10	0.75	3.6/1.8
CHI 8-20 S	1.0	5.0/2.5
CHI 8-15	1.5	5.8/2.9
CHI 8-20	1.5	6.9/3.5

Electrical data, Canada

With cUL approval

3 x 575Y V, 60 Hz

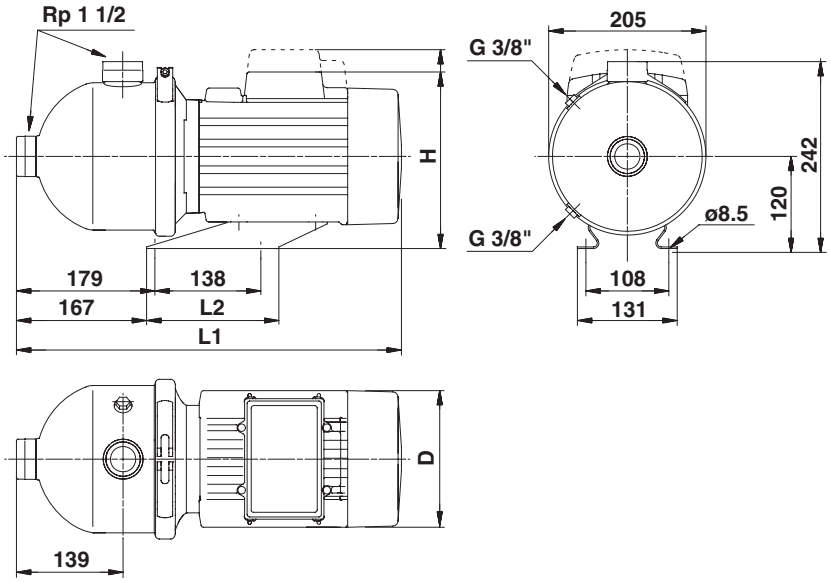
Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 8-10	0.75	1.44
CHI 8-20 S	1.0	2.00
CHI 8-15	1.5	2.32
CHI 8-20	1.5	2.80

Electrical data, Japan

3 x 200-220 Δ / 346-380 Y

Pump type	P_2 [W]	$I_{1/1}$ [A]
CHI 8-10	805	3.7/2.1
CHI 8-20S	1160	5.5/3.2
CHI 8-15	1410	6.0/3.5
CHI 8-20	1690	7.4/4.3

Technical data, 60 Hz



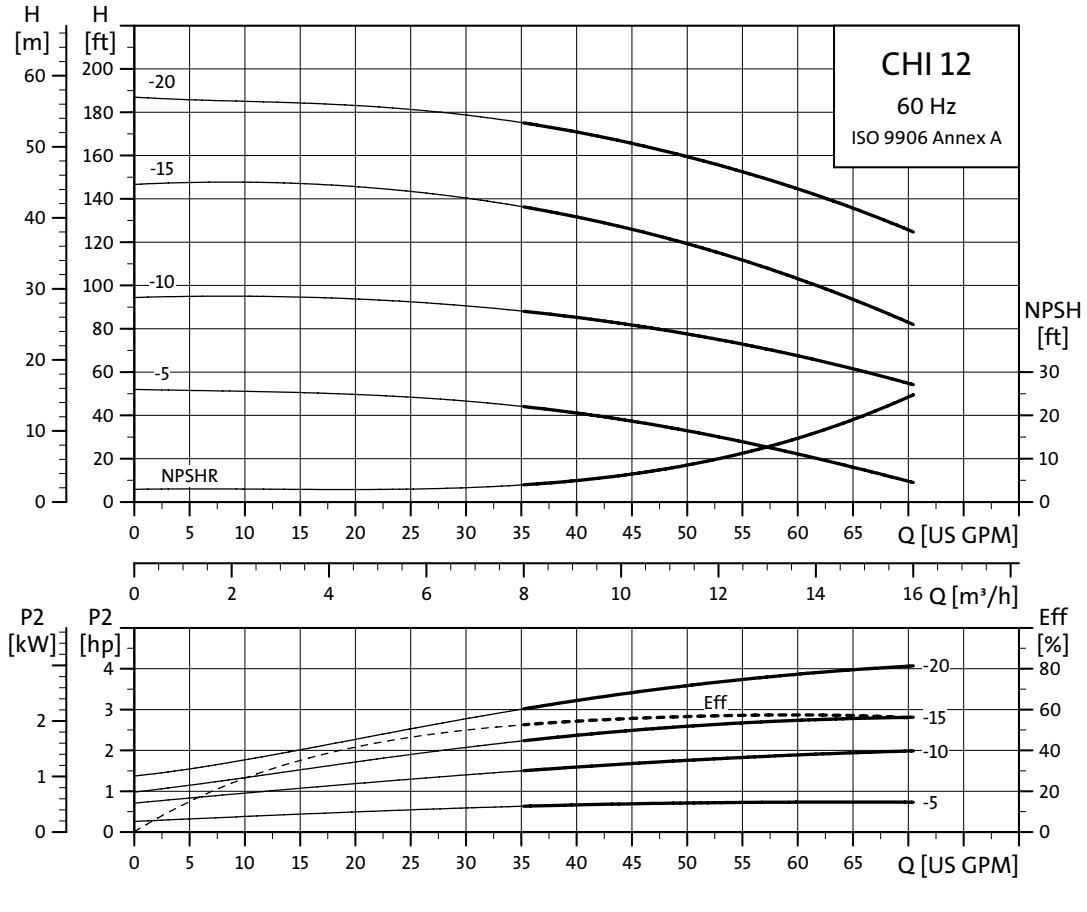
TM00 0466 2001

Dimensions and weights

Pump type	L1 [mm]		H [mm]		Net weight [kg]	
	1-phase	3-phase	1-phase	3-phase	1-phase	3-phase
CHI 8-10	437	397	253	229	12.3	10.5
CHI 8-20 S	437	437	229	229	14.4	11.7
CHI 8-15	500	437	259	229	24.9	13.5
CHI 8-20	500	437	259	229	25.4	13.7

Technical data, 60 Hz

CHI 12, 60 Hz



TM02 8484 0204

Electrical data, USA

With cUL approval

1 x 115 V / 230 V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 12-05	1.0	7.7/4.0
CHI 12-10	1.5	19.3/9.7

3 x 208-230YY V / 440-480Y V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 12-05	0.5	2.5/1.3
CHI 12-10	1.5	6.2/3.1
CHI 12-15	2.0	8.6/4.3

Electrical data, Canada

With cUL approval

3 x 575Y V, 60 Hz

Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 12-05	0.5	1.04
CHI 12-10	1.5	2.48
CHI 12-15	2.0	3.80

Electrical data, Japan

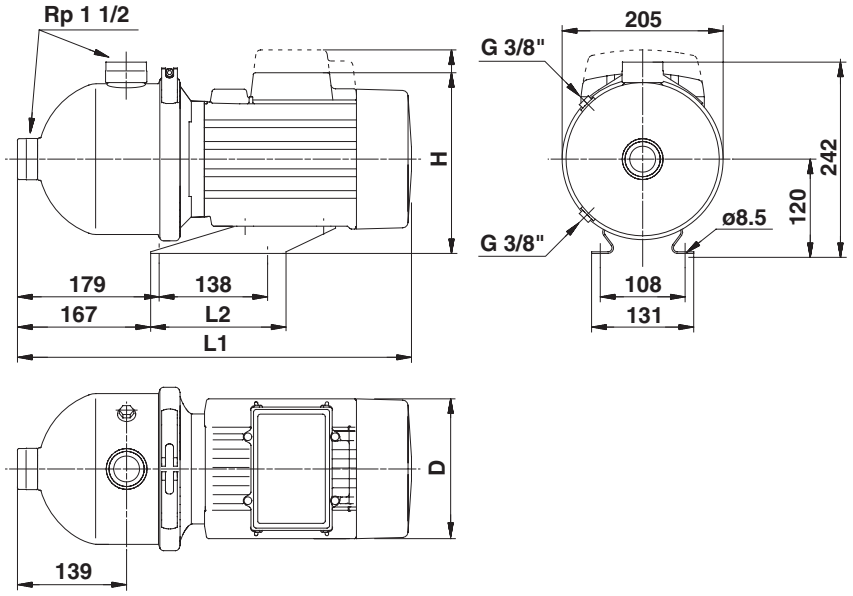
3 x 200-220Δ V / 3 x 346-380Y V, 60 Hz

Pump type	P_2 [W]	$I_{1/1}$ [A]
CHI 12-05	540	2.8/1.6
CHI 12-10	1490	6.4/3.7
CHI 12-15	2075	9.1/5.3

3 x 200-230Δ V / 3 x 346-400Y V, 60 Hz

Pump type	P_2 [W]	$I_{1/1}$ [A]
CHI 12-20	3080	12.7/7.3

Technical data, 60 Hz



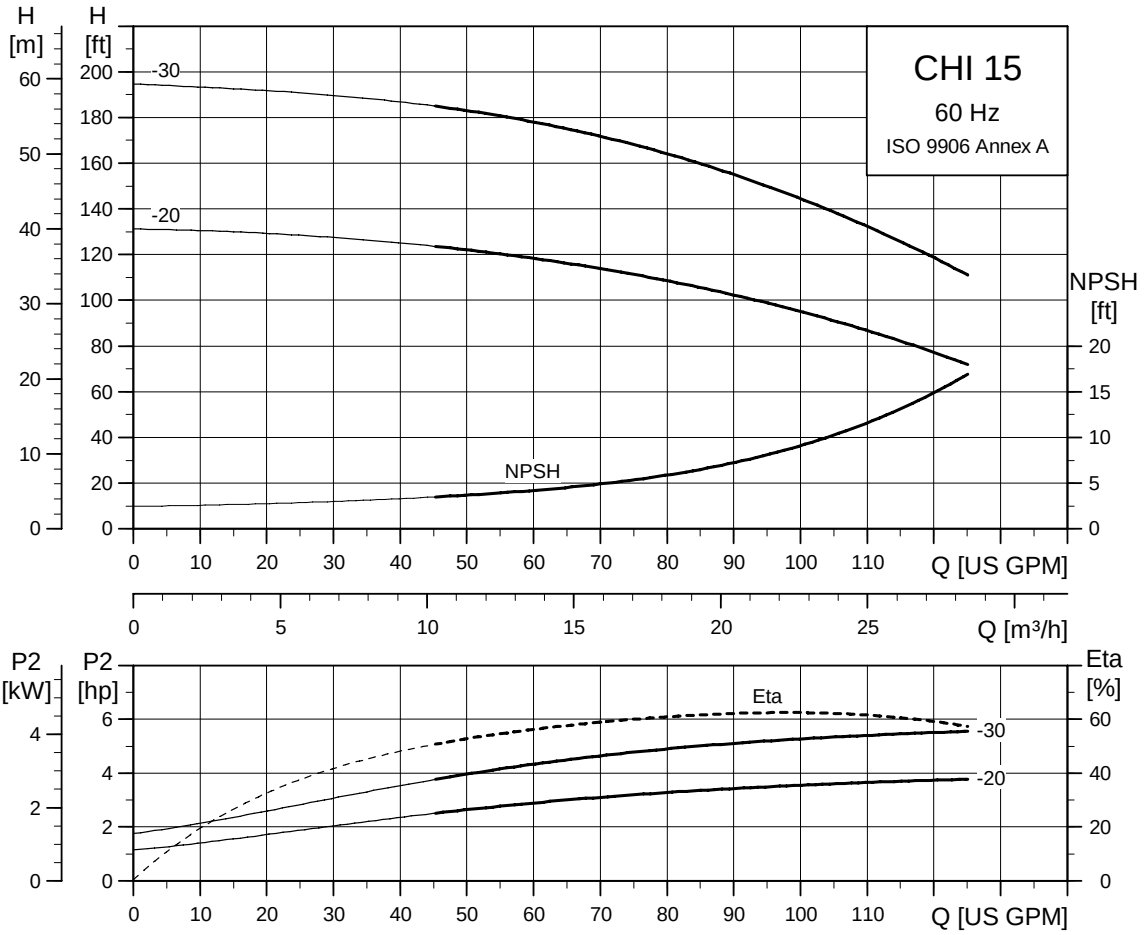
TM00 0466 2001

Dimensions and weights

Pump type	L1 [mm]		H [mm]		Net weight [kg]	
	1-phase	3-phase	1-phase	3-phase	1-phase	3-phase
CHI 12-05	397	397	253	229	11.6	9.9
CHI 12-10	500	437	259	229	23.4	13.2
CHI 12-15	-	500	-	230	-	20.6
CHI 12-20	-	550	-	230	-	23.4

Technical data, 60 Hz

CHI 15, 60 Hz



TM02 4204 1806

Electrical data, USA

With cUL approval

3 x 208-230YY V / 440-480Y V, 60 Hz

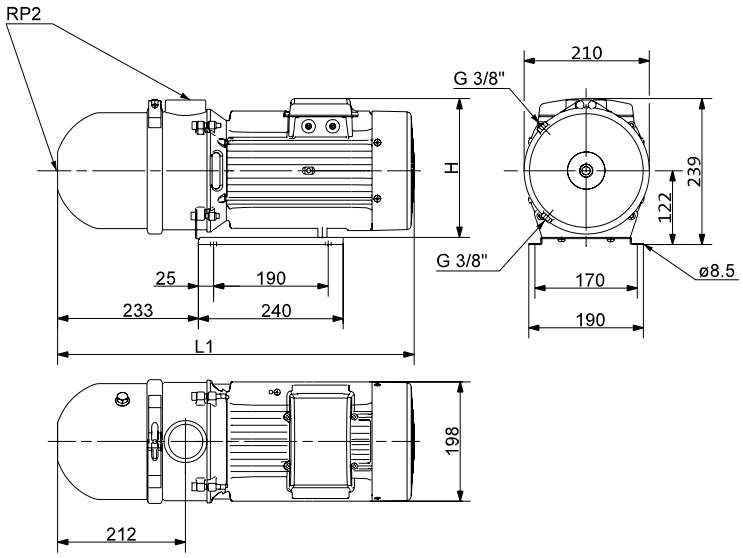
Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 15-20	3	10.6/5.3
*CHI 15-30	5	14.8/7.4

* Without UL/UR approval

Electrical data, Japan

3 x 200-220Δ V / 3 x 346-380Y V, 60 Hz

Pump type	P_2 [W]	$I_{1/1}$ [A]
CHI 15-20	2820	10.9/6.3
CHI 15-30	4110	15.5/8.9



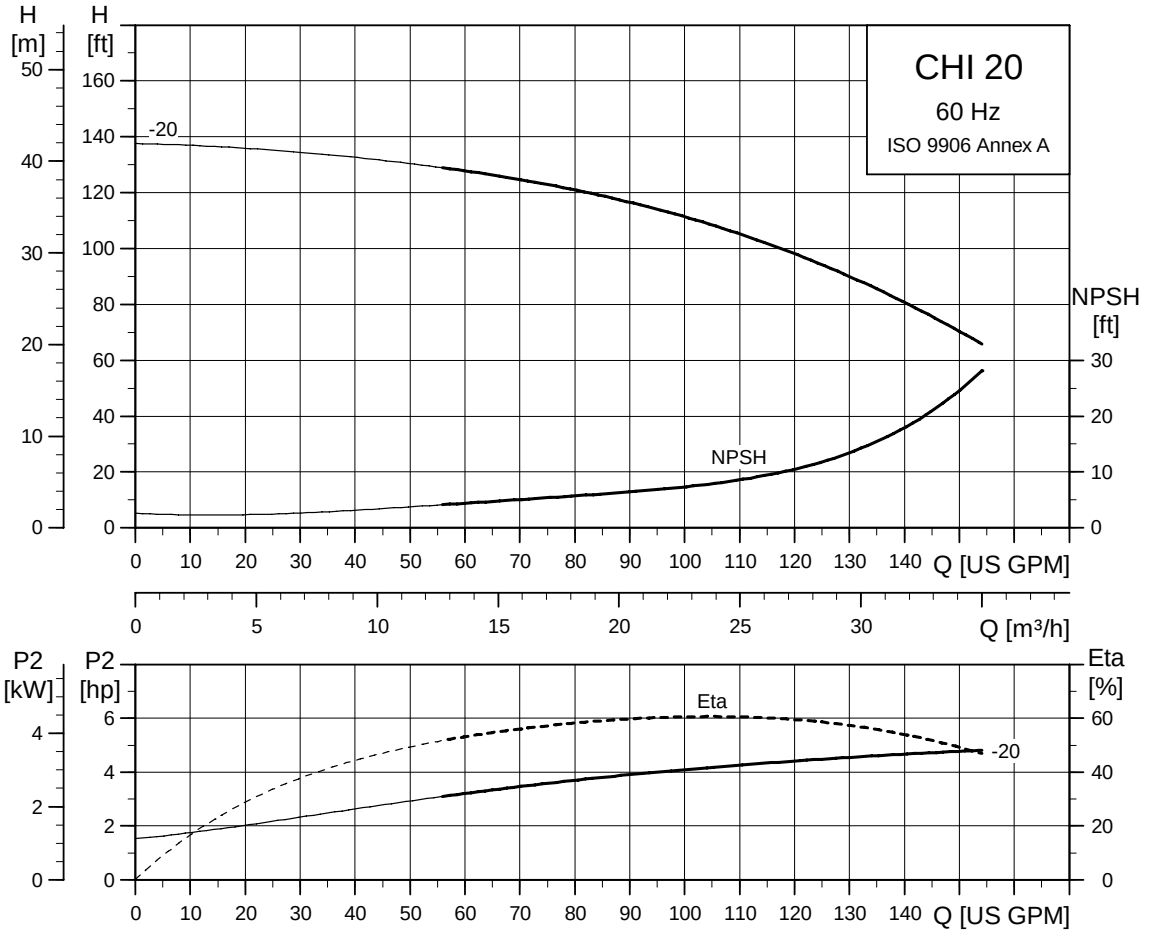
TM03 3487 4507

Dimensions and weights

Pump type	L1 [mm]	H [mm]	Net weight [kg]
CHI 15-20	591	242	33.0
CHI 15-30	591	242	34.5

Technical data, 60 Hz

CHI 20, 60 Hz



Electrical data, USA

With cUL approval

3 x 208-230YY V / 440-480Y V, 60 Hz

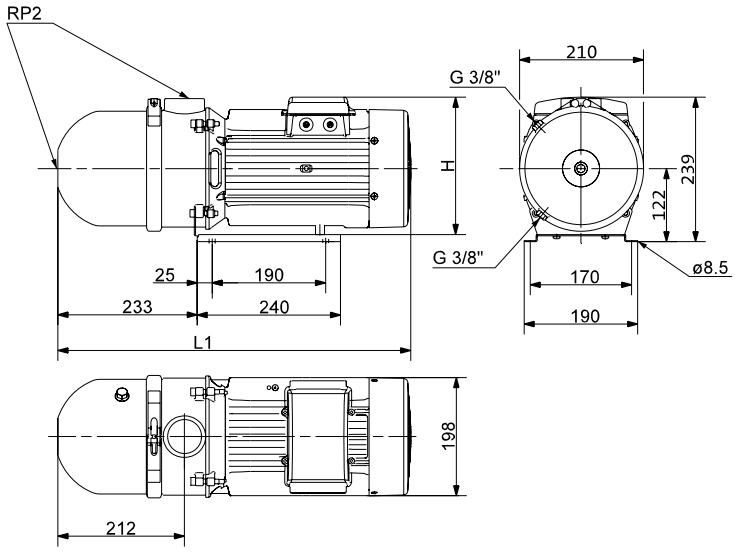
Pump type	P_2 [hp]	$I_{1/1}$ [A]
CHI 20-20	3	12.7/6.4

Electrical data, Japan

3 x 200-220Δ V / 3 x 346-380Y V, 60 Hz

Pump type	P_2 [W]	$I_{1/1}$ [A]
CHI 20-20	3570	12.9/7.5

Technical data, 60 Hz



TM03 3487 4507

Dimensions and weights

Pump type	L1 [mm]	H [mm]	Net weight [kg]
CHI 20-20	591	242	33.0

Pumped liquids

Thin, non-explosive liquids, not containing solid particles or fibres. The liquid must not chemically attack the pump materials.

When pumping liquids with a density and/or viscosity higher than those of water, oversized motors must be used, if required.

Whether a pump is suitable for a particular liquid depends on a number of factors of which the most important are the chloride content, pH value, temperature and content of chemicals and oils.

Please note that aggressive liquids (for instance seawater and some acids) may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

List of pumped liquids

A number of typical liquids are listed below.

Other pump versions may be applicable, but those stated in the list are considered to be the best choices.

The table is intended as a general guide only, and cannot replace actual testing of the pumped liquids and pump materials under specific working conditions.

The list should, however, be applied with some caution as factors such as concentration of the pumped liquid, liquid temperature or pressure may affect the chemical resistance of a specific pump version.

Safety precautions must be made when pumping dangerous liquids.

Notes

a	May contain additives or impurities which can cause shaft seal problems.
b	The density and viscosity may differ from those of water. Consider this when calculating motor and pump performance.
c	In order to avoid corrosion, the liquid must be free of oxygen.
d	Flammable or combustible liquid. Safety precautions must be considered to ensure safe handling of flammable liquids. Handling the liquid above the flashpoint and/or boiling point will require the greatest restrictions. A sealless pump may be required. Contact Grundfos.
e	Risk of crystallization/precipitation on the shaft seal.
f	If oil residues are present, EPDM cannot be used.

Pumped liquids	Notes	Additional information	CHI 2/4/8/12	CHI 15/20
Water				
Boiler feed water			BQQE/BUBE	BQQE
Brackish water	a	30 °C, 2000 ppm chloride	BQQE/BUBE	BQQE
Condensate			BQQE/BUBE	BQQE
Cooling and cutting lubricant	b		BQQV	BQQV
Groundwater		< 300 ppm chloride	BQQE/BUBE	BQQE
Demineralized water			BQQE/BUBE	BQQE
District heating water			BQQE/BUBE	BQQE
Oil-containing water			BQQV/BUBV	BQQV
Softened water			BQQE/BUBE	BQQE
Swimming pool water, chlorinated		40 °C, 150 ppm chloride, < 2 ppm free chlorine	BQQE/BUBE	BQQE
Coolants				
Calcium chloride	b, c, d, f	<0 °C, 30 %	BQQE	BQQE
Ethylene glycol	b, c	<50 °C	BQQE	BQQE
Glycerine (glycerol)	b, c	<50 °C	BQQE	BQQE
Hydrocarbon-based coolant	c, e	50 °C	BQQV	BQQV
Potassium acetate (inhibited)	b, c, d, f	<20 °C	BQQE	BQQE
Potassium formate (inhibited)	b, c, d, f	<20 °C	BQQE	BQQE
Propylene glycol	b, c	<50 °C	BQQE	BQQE
Sodium chloride	b, c, d, f	<0 °C, 30 %	BQQE	BQQE
Fuels				
Diesel oil	e		BQQV/BUBV	BQQV
Jet fuel	e		BQQV/BUBV	BQQV
Kerosene	e		BQQV/BUBV	BQQV
Naphta	e		BQQV/BUBV	BQQV
Petrol	e		BQQV/BUBV	BQQV
Biodiesel	e		BQQV/BUBV	BQQV
Mineral oils				
Crude oil	b, c, e	<20 °C	BQQV/BUBV	BQQV
Mineral lubricating oil	c, e		BQQV/BUBV	BQQV
Mineral motor oil	c, e		BQQV/BUBV	BQQV
Synthetic oils				
Synthetic lubricating oil	c, e		BQQV/BUBV	BQQV
Synthetic motor oil	c, e		BQQV/BUBV	BQQV

Pumped liquids

Pumped liquids	Notes	Additional information	CHI 2/4/8/12	CHI 15/20
Silicone oil	c		BQQV/BUBV	BQQV
Vegetable oils				
Corn oil	b, c		BQQV/BUBV	BQQV
Olive oil	b, c		BQQV/BUBV	BQQV
Peanut oil	b, c		BQQV/BUBV	BQQV
Rape-seed oil	b, c		BQQV/BUBV	BQQV
Soya oil	b, c		BQQV/BUBV	BQQV
Cleaning				
Alkaline degreasing agent	b, g	<80 °C 1)	BQQE	BQQE
Soap (salts of fatty acids)	b	<80 °C 1)	BQQV	BQQV
Organic solvents				
Acetone	e	40 °C	BQQE/BUBE	BQQE
Ethyl alcohol (ethanol)	e	40 °C	BQQE/BUBE	BQQE
Isopropyl alcohol	e	40 °C	BQQE/BUBE	BQQE
Methyl alcohol (methanol)	e	40 °C	BQQE/BUBE	BQQE
Oxidants				
Hydrogen peroxide		20 °C, 5 %	BQQE/BUBE	BQQE
Salts				
Ammonium bicarbonate	b, c	60 °C, 30 %	BQQE	BQQE
Copper sulphate	b, c, f	60 °C, 30 %	BQQE/BQQV	BQQE/BQQV
Ferric sulphate	b, c, f	20 °C, 30 %	BQQE/BQQV	BQQE/BQQV
Potassium bicarbonate	b, c	60 °C, 30 %	BQQE/BQQV	BQQE/BQQV
Sodium carbonate	b, c, f	60 °C, 30 %	BQQE	BQQE
Potassium permanganate	b, c	20 °C, 1 %	BQQE/BQQV	BQQE/BQQV
Sodium nitrate	b, c	60 °C, 30 %	BQQE/BQQV	BQQE/BQQV
Sodium nitrite	b, c	60 °C, 30 %	BQQE/BQQV	BQQE/BQQV
Sodium phosphate (mono)	b, c, f	60 °C, 20 %	BQQE/BQQV	BQQE/BQQV
Sodium phosphate (di)	b, c, f	60 °C, 30 %	BQQE/BQQV	BQQE/BQQV
Sodium phosphate (tri)	b, c, f	70 °C, 20 %	BQQE/BQQV	BQQE/BQQV
Sodium sulphate	b, c, f	60 °C, 30 %	BQQE/BQQV	BQQE/BQQV
Sodium sulphite	b, c, f	60 °C, 20 %	BQQE/BQQV	BQQE/BQQV
Acids				
Acetic acid		20 °C, 15 %	BQQE/BQQV	BQQE/BQQV
Citric acid	c	40 °C, 50 %	BQQE	BQQE
Formic acid	c	20 °C, 30 %	BQQE	BQQE
Nitric acid	c	20 °C, 5 %	BQQE/BQQV	BQQE/BQQV
Oxalic acid	f	20 °C, 1 %	BQQE/BQQV	BQQE/BQQV
Phosphoric acid	b, c, f	70 °C, 40 %	BQQE/BQQV	BQQE/BQQV
Sulphuric acid	b, c	20 °C, 1 %	BQQE/BQQV	BQQE/BQQV
Sulphurous acid		20 °C, 5 %	BQQE	BQQE
Alkalies				
Ammonium hydroxide		30 °C, 30 %	BQQE	BQQE
Calcium hydroxide	b	30 °C, 5 %	BQQE	BQQE
Potassium hydroxide	c, f	60 °C, 20 %	BQQE	BQQE
Sodium hydroxide	c, f	80 °C, 20 %	BQQE	BQQE

Variants

Lists of variants

Although the Grundfos CHI, CHIU product range offers a number of pumps for different applications, customers require specific pump solutions to satisfy their needs. Below are the options available for customizing the CHI, CHIU. Contact Grundfos for further information or for requests other than the ones mentioned below.

Motors

Motor with thermal protection	Grundfos offers motors with built-in bimetallic thermal switches or temperature-controlled PTC sensors (thermistors) incorporated in the motor windings.
Oversize motor	In installations where one of the conditions mentioned below is present, the motor size must be evaluated to make sure there will be no risk of overload. • Ambient temperatures above 40 °C. • Liquid temperatures below 0 °C. • Installation at an altitude of more than 1000 metres above sea level • Use of **glycol** or other high-viscous liquids. Alternative motors are available on request.
Dual-voltage motors 50/60 hz	In some cases the standard product can run at dual voltage and frequency. If the standard product cannot be used for dual voltage, a bigger motor can very often be used instead.
Use of external frequency converter	For most three-phase CHI, CHIU pumps a frequency converter can be used. Single-phase motors are not suitable for frequency converter operation. In many cases where an external frequency converter is used it is necessary to protect the motor against voltage peaks higher than 650 V (peak value). In these cases it is often less expensive to ask for phase insulation in the pump than use a filter such as an LC filter. Grundfos offers pumps with phase insulation to protect the pump against voltage peaks up to 1000 V (peak values). This is a customized version, and the supplier of the frequency converter must be consulted.
Harting plug	Harting plugs are available for easier replacement of pumps.
Terminal box position	Other terminal box positions are possible.

Shaft seals

BUBV, BUBE, BQQE, BQQV are standard for CHI, CHIU pumps.
Shaft seals with FFKM or FXM O-ring material are recommended for applications where the pumped liquid may damage the standard O-ring material.

Connections and other variants

Pipe connections	NPT and Rp threads are available.
TriClamp connection	TriClamp connections are of a hygienic design with a sanitary coupling for use in the pharmaceutical and food industry.
Electropolished pump sleeve	To substantially reduce the risk of corrosion. For use in the pharmaceutical and food industry.

Certificates and nameplates

Certificates	Certificate of compliance with the order Test certificate Inspection certificate Standard test report
Extra nameplate	
UR-marked motor	If the UL-listed product according to UL778 is not available, a pump with UR-marked motor according to UL1004 can be offered as an alternative.

Special tests or cleaning

Silicone-free
Grease-free
Rinse in alcohol

Pumps

Low-temperature pump	Exposed to temperatures below –20 °C, coolant pumps may require neck rings with a different diameter or without neck ring in order to prevent impeller drag. If neck rings are removed a drop in head performance must be expected. In some extreme cases, –30 °C cold liquids can be pumped by a CHI. Contact Grundfos.

Product options

Extra low noise level CHI 15 and 20	Under the right conditions, it is possible to remove the ventilator fan and thus reduce the noise level.
Pump colour	All colours are possible.

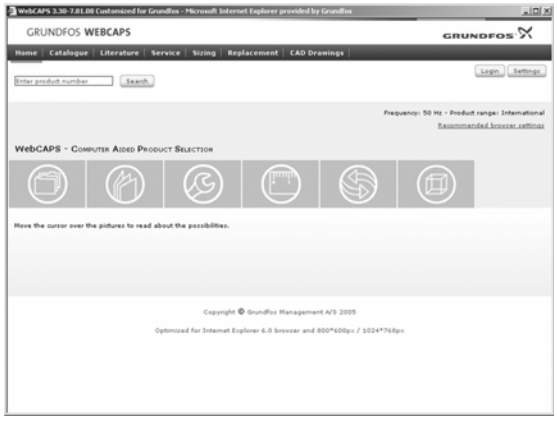
Pumping of refrigerants

The CHIU is able to pump liquid gases, such as R134a.

Variants

Further product documentation

WebCAPS



WebCAPS is a **Web**-based **C**omputer **A**ided **P**roduct **S**election program available on www.grundfos.com.

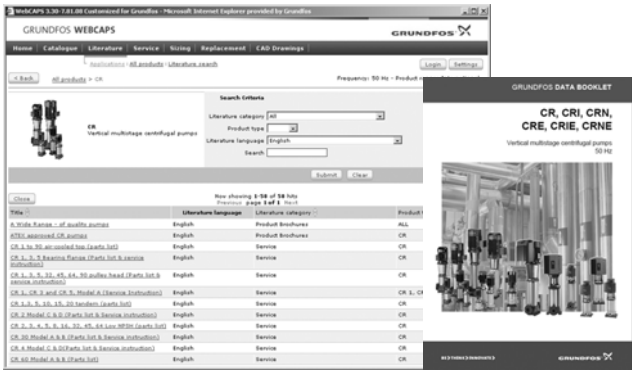
WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.

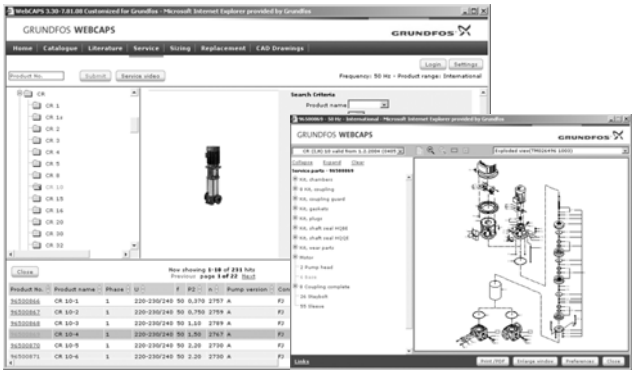
Catalogue

With a starting point in areas of applications and pump types, this section contains
- technical data
- curves (QH, Eta, P1, P2, etc.) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

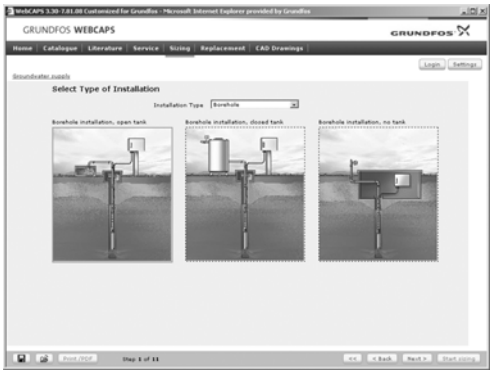
In this section you can access all the latest documents of a given pump, such as
- data booklets
- Installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures, etc.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and cancelled Grundfos pumps.
Furthermore, this section contains service videos showing you how to replace service parts.

Further product documentation



Sizing

With a starting point in different application areas and installation examples, this section gives easy step-by-step instructions in how to

- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, lifecycle costs, etc.
- analyse your selected pump via the built-in lifecycle cost tool
- determine the flow velocity in wastewater applications, etc.

Replacement

In this section you find a guide to select and compare replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump.
The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. After having specified the installed pump, the guide suggests a number of Grundfos pumps which can improve both comfort and efficiency.

CAD drawings

In this section it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

The following formats are available in WebCAPS:

2-dimensional drawings
- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings
- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

WinCAPS

Fig. 7 WinCAPS CD-ROM

WinCAPS is a **Win**dows-based **C**omputer **A**ided **P**roduct **S**election program containing detailed information on more than 185,000 Grundfos products in more than 20 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no Internet connection is available.

WinCAPS is available on CD-ROM and updated once a year.

V7031261 1207	GB
Repl. V7031261 0807	

GRUNDFOS A/S . DK-8850 Bjerringbro . Denmark
Telephone: +45 87 50 14 00

www.grundfos.com